BIOLOGICAL ASSESSMENT
FOR
GRIZZLY BEAR
(Ursus arctos horribilis)

RE-CONSULTATION FOR THE BITTERROOT NATIONAL FOREST PLAN INCLUDING BITTERROOT NATIONAL FOREST TRAVEL MANAGEMENT PLANNING PROJECT AND BITTERROOT NATIONAL FOREST PLAN ELK AMENDMENT FOR BITTERROOT NATIONAL FOREST LANDS IN MONTANA

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Summary

Determination of Effects

This Biological Assessment (BA) analyzes the effects of the 1987 Bitterroot National Forest (Forest) Plan (Forest Plan, U.S. Department of Agriculture 1987) including the Forest Travel Management Planning Project (Travel Management Plan, U.S. Department of Agriculture 2016a, 2016b) and the Forest Plan Elk Amendment (Amendment) on grizzly bears (Appendix A, Map 1) on Bitterroot National Forest lands in Montana. Continued implementation of the Forest Plan including the Travel Management Plan and the Amendment ***may affect, and is likely to adversely affect*** the threatened grizzly bear.

Need for Reinitiation of Formal Consultation on the Forest Plan

Title 50 CFR § 402.16 requires reinitiation of formal consultation where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (a)(4) a new species is listed, or critical habitat designated that may be affected by the action. The 2019 Biological Assessment for the Bitterroot National Forest Plan (U.S. Department of Agriculture 2019) evaluated effects to grizzly bear on the eastern portion of the Forest on all National Forest Service (NFS) lands east of Highway 93. This Biological Assessment (BA) addresses the determination from the US Fish and Wildlife Service (Service) from September 18, 2019 that bears "may be present" on all NFS lands of the Forest in Montana (updated June 10, 2020, U.S. Department of the Interior, Fish and Wildlife Service 2020).

The Forest completed the Travel Management Plan in 2016, when grizzly bears were not known to occur on the Forest. In addition, the Forest is proposing an amendment to the Forest Plan that would revise the objectives, goals, standards, and guidelines regarding habitat management for elk. Both the Travel Management Plan and the Amendment were completed under the 2012 Planning Rule. These changes in the Forest Plan and the absence of previous consultation on the Travel Management Plan triggers the need for consultation on the Forest Plan, due to the changed action.

No critical habitat has been designated for grizzly bear within the Bitterroot National Forest; but suitable grizzly bear habitat may be affected by proposed action, and will be analyzed in this assessment. This BA has been prepared in compliance with Section 7 of the Endangered Species Act of 1973 (as amended), 50 CFR § 402.12, CFR § 219.9 of the NFMA regulations, and Chapter 2670 of the Forest Service Manual. ESA requires all Federal agencies to ensure that actions authorized, funded, or carried out by those agencies are not likely to jeopardize the continued existence of any threatened, endangered, or proposed species, or result in the destruction or adverse modification of their critical habitat.

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Legal and regulatory framework

Threatened, endangered, and proposed species are managed by the Forest Service in accordance with the National Forest Management Act (NFMA) of 1976 (PL 94-588) and the Endangered Species Act (ESA) of 1973 (PL 93-205, as amended). NFMA requires that forest plans provide for multiple use and sustained yield of products and services in accordance with the Multiple-Use, Sustained-Yield Act of 1960, and specifically that they include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness (section 6(e)(1)). ESA section 7(a)(1) directs all federal agencies to carry out programs for the conservation of endangered species and threatened species. ESA section 7(a)(2) requires federal agencies to ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any threatened, endangered, or proposed species; or adversely modify critical habitat. ESA section 9 prohibits the taking or possession of any endangered species of fish or wildlife.

A forest plan including amendments identify general land use purposes or suitability, desired future conditions, objectives for resource conditions on specific lands, and standards and guidelines for management activities. The forest plan provides the framework for future site-specific decision making concerning all activities conducted and allowed on National Forest System (NFS) lands. Therefore, the effects of a forest plan and amendments are indirect (occur later in time). As required by the NFMA, all resource plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands must be consistent with the forest plan and amendments.

Forest Service policy states that forest plan management direction will contribute to the recovery of federally listed species (Forest Service Manual 2622). The responsible official may consult on the plan as a "conservation program" for listed species to comply with ESA section 7(a)(1). If a plan, plan revision, or amendment may affect federally listed species or critical habitat, the responsible official will consult on the forest plan (Forest Service Manual 1920.3) in accordance with the provisions of ESA section 7(a)(2) and accompanying regulations that guide interagency cooperation (50 CFR § 402). If the action may result in the incidental take of a listed species, the consultation may include issuance of a permit for incidental take in accordance with ESA section 10.

The regulations guiding interagency cooperation under the ESA (50 CFR § 402.02) define a *framework programmatic action* as a broad-scale plan that provides the framework for development of future action(s) that are authorized, funded or carried out at a later time. An incidental take statement may be provided, recognizing that actual take of a listed species would not occur unless and until those future action(s) are authorized, funded, or carried out and subject to their own future section 7 consultation. This consultation on the Forest Plan, Travel Management Plan, and Amendment on Bitterroot National Forest lands in Montana fits the definition of a framework programmatic action.

Reinitiation of section 7 consultation

The ESA regulations for interagency cooperation requires federal agencies to request reinitiation of consultation (50 CFR § 402.16) in four different situations where the federal agency retains discretionary involvement or control over the action, or the action is authorized by law and:

1) the amount or extent of taking specified in the incidental take statement is exceeded;
2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or

4) a new species is listed, or critical habitat is designated that may be affected by the identified action.

Grizzly bears had been absent from the Bitterroot National Forest (Forest) for several decades and were not addressed in either the 1987 Bitterroot National Forest Plan (Forest Plan, U.S. Department of Agriculture 1987) or the accompanying final environmental impact statement. The Forest completed the Travel Management Planning Project (Travel Management Plan, U.S. Department of Agriculture 2016a, 2016b) in 2016, when grizzly bears were still thought to be absent from the Forest. In recent years, a few grizzly bears have been observed in and around the Forest most likely originating from the Northern Continental Divide Ecosystem (NCDE), which has continued to increase in population size and distribution (Costello et al. 2016), although grizzly bears moving from the Cabinet-Yaak Ecosystem (CYE) are suspected as well.

On September 7, 2017, the U.S. Fish and Wildlife Service (Service) determined that, for purposes of ESA section 7 consultation, the grizzly bear "may be present" on the portion of the Forest east of highway 93 (U.S. Department of the Interior, Fish and Wildlife Service 2017). Subsequently, the Service and the Forest agreed to reinitiate consultation on the Forest Plan to provide a framework for project consultations (Appendix A, Map 2). This determination and subsequent Biological Assessment for the Bitterroot National Forest Plan (U.S. Department of Agriculture 2019) resulted in the Biological Opinion on the Effects of continued implementation of the Bitterroot National Forest Plan on Grizzly Bears (U.S. Department of the Interior, Fish and Wildlife Service 2019). The Travel Management Plan was not addressed as the consultation only applied to the eastern portion of the Forest. On September 18, 2019, the Service determined that for the purposes of ESA section 7 consultation, grizzly bears "may be present" on all NFS Lands in Montana on the Bitterroot National Forest (U.S. Department of the Interior, Fish and Wildlife Service 2020a). In further clarification, the Service determined on January 21, 2020 that:

> the current Endangered Species Act (ESA) section 10(j) rule for grizzly bears in the Bitterroot Grizzly Bear Experimental Population Area (BGBEPA), 50 CFR § 17.84(1), does not apply to grizzly bears that have dispersed into the BGBEPA on their own…[and]…grizzly bears that are present in the BGBEPA are not covered by the 10(j) rule and are considered threatened under the ESA. This means that ESA section 7 consultation obligations apply to proposed federal agency actions that may affect grizzly bear in the BGBEPA (U.S. Department of the Interior, Fish and Wildlife Service 2020b).

In 2019, the Forest decided to pursue a Forest Plan Elk Amendment (Amendment) addressing some antiquated standards regarding elk habitat management on NFS lands. Previous consultations with the Service used the Forest Plan elk habitat effectiveness (EHE) standards related to road density to discuss secure habitat for grizzly bears. This metric provided a method to analyze effects to grizzly bear from Forest projects. The proposed Amendment will replace the EHE standards related to road density, and because no current Forest Plan consultation exists on the west side of the Forest or on the Travel Management Plan with respect to effects on grizzly bears, the Service and the Forest have agreed to reinitiate consultation on the Forest Plan including the Travel Management Plan and the Amendment for Forest lands in Montana .

Canada lynx were previously consulted on for the Forest Plan (U.S. Department of Agriculture 2007a and 2007b) and the Travel Management Planning Process (U.S. Department of Agriculture 2013, U.S. Department of the Interior, Fish and Wildlife Service 2013). The Amendment will have No Effect on Canada lynx and No Effect on Canada lynx designated critical habitat as none exists on the Bitterroot National Forest. No further analysis for Canada lynx is necessary for this consultation.

Bull Trout were previously consulted on for the Forest Plan (INFISH, U.S. Department of Agriculture 1995) and the Travel Management Planning Project (U.S. Department of Agriculture 2010, U.S. Department of the Interior, Fish and Wildlife Service 2010). The Amendment will have No Effect on Bull Trout or designated critical habitat. No further analysis for Bull Trout is necessary for this consultation.

1.0 Proposed Action

1.1 Forest Plan

The proposed action for purposes of this Biological Assessment (BA) is to continue to implement the 1987 Forest Plan, as amended.

A forest plan provides an integrated plan for land and resource management. Existing Forest Plan direction that may assist in the management of grizzly bears is listed in Appendix B. Key goals, objectives and standards of the Forest Plan that are aimed at the conservation of threatened and endangered species include:

1. A forest-wide goal to maintain habitat for the possible recovery of threatened and endangered species.
2. A forest-wide wildlife objective and a forest-wide standard to participate and cooperate in threatened and endangered species identification, recovery, and protection.

1.2 Amendment

The Forest Plan includes plan components related to elk habitat management during project planning. The Forest proposes to amend these components with new desired conditions, goals, and guidelines, which will remove existing standards and introduce new components. Part of the original standards pertain to motorized access management, which influences habitat effectiveness for elk as well as habitat for grizzly bears. This amendment will complement the Bitterroot National Forest Travel Plan (U.S. Department of Agriculture 2016a, 2016b).

Amending the Forest Plan will provide a greater degree of flexibility by managing for a mosaic of arrangement and successional stages to support elk, and evaluating and integrating new science regarding elk disturbance in coordination with Montana Fish, Wildlife, and Parks (MTFWP). The full Amendment language clarifies the substitutions and deletions from the current standards to the new components (Appendix C).

1.3 Travel Management Plan

The proposed action for the purpose of this BA is to continue implementation of the Travel Management Plan which the Forest completed in 2016 (U.S. Department of Agriculture 2016a, 2016b), which was specific to Forest lands in Montana (Appendix A, Map 1). Because this updated Travel Management Plan was done before grizzly bears were designated “may be present”, the Forest did not consult on effects to grizzly bears at the time. The purpose and need for the updated travel management plan was to:

- Address conflicts between motorized and nonmotorized uses;
- Improve quality of the recreational experience;
- Integrate resource considerations into the route system;
- Address confusion regarding where and when motorized use can occur and what types of vehicles are allowed; and
- Ensure consistency with the 2005 Travel Management Rule.

The travel management plan addresses both non-winter and over-snow motorized vehicle use. The term “winter” generally refers to the period beginning around December 20–21 and ending around March 19–21. The following brief synopsis summarizes some changes that were made by the decision:

- Decrease by 51 miles (3.5 percent) the miles of roads designated open to highway-legal vehicles, both yearlong and seasonally, from 1,456 miles to 1,405 miles.
- Decrease by 74 miles (67 percent) the miles of double-track trails designated open to vehicles 50 inches or less in width, yearlong, from 110 miles to 36 miles. Increase by 9 miles (1.5 percent) the miles of double-track trails designated open to vehicles 50 inches or less in width, seasonally, from 550 to 559.
- Decrease by 291 miles (88 percent) the miles of single-track trails designated open to motorcycles, yearlong, from 330 miles to 39 miles. Increase by 42 miles (55 percent) the miles open seasonally to motorcycles, from 78 miles to 121 miles.
- Authorize 30 miles of existing unauthorized routes, including19 miles of double-track trails and 11 miles for use as single-track trails (10 miles seasonally, and 1 mile open yearlong).
- Decrease the areas designated open to snowmobile use by 205,141 acres (27 percent) from 748,981 acres to 543,840 acres.
- Motorized/mechanical transport, including bicycles, is prohibited in the Selway-Bitterroot recommended wilderness area and in the Sapphire and Blue Joint wilderness study areas, for both summer and over-snow use.
- Game retrieval using motorized means off designated routes is not allowed.

1.4 Ongoing Related Actions

1.4.1 Bear safety training and public information

A variety of information and education materials (e.g., pamphlets, brochures, signs, videos, etc.) and programs are provided to the public at Forest Service offices. Signs and brochures about bear identification and proper behavior and safety procedures in bear country are placed at campgrounds, trailheads, dispersed recreation sites, picnic areas, etc. The Forest has employed a front country bear ranger to contact visitors at campgrounds and inform them of the Be Bear Aware message. Wilderness rangers and other backcountry patrols also contact recreationists to inform and educate them on these topics. Forest Service employees are provided with information and training about working in bear habitat and the proper use of bear spray.

1.4.2 Food/attractant storage

Food/attractant storage orders are regulations require that food, garbage, and other attractants to be secured so that black bears or grizzly bears cannot obtain access to them. This prevents food-conditioning of bears, which may lead to human-bear conflicts, injuries, or fatalities. The national forests within recovery areas that are occupied by grizzly bears began issuing food/attractant storage orders in the mid to late 1980s, several of which have later been expanded to apply forest-wide.

In 2014, the Beaverhead-Deerlodge National Forest issued a food storage order for the entire Anaconda-Pintler Wilderness Area, which includes a portion (41,194 acres) of the Forest (Appendix D). All publics and permitted outfitters operating in the Anaconda-Pintler Wilderness are required to comply with the food storage order. There is no other food storage order on the Bitterroot National Forest.

The Forest adds a design feature to project decisions and contracts that requires contractors to store bear attractants in bear-resistant containers or hard-sided vehicles while implementing projects. A provision in Outfitter and Guide special use permits requires the permittee to provide Forest Be Bear Aware and bear identification materials to all guides, camp help, and clients. Outfitters are required to inform clients and guides of the protected status of grizzly bears. The Forest has installed bear resistant containers at many of the front country campgrounds and recreation sites used by the public.

In the late 1990s, Brown Bear Resources, Inc. completed a survey of bear attractant sites in and around the Bitterroot Ecosystem (used interchangeably with Bitterroot Ecosystem in this document) as a tool to prioritize and address areas where sanitation problems exist. Defenders of Wildlife, National Wildlife Federation, and other non-government organizations have raised funds to purchase and place bear-resistant containers and dumpsters in areas where needed, including on private lands.

1.4.3 Highways and railroads

The Forest Service coordinates with transportation agencies and railroad companies to seek to reduce the risk of collisions with grizzly bears and other wildlife. The Forest Service maintains the Wildlife Crossings Toolkit website (https://www.fs.fed.us/wildlifecrossings/index.php) which was developed in partnership with the National Park Service, Federal Highway Administration and the American Association of State Highway and Transportation Officials. This website provides state-of-the-art information for biologists, engineers, and transportation professionals to assist in reducing human and wildlife injuries and mortalities, and maintaining or restoring habitat connectivity across transportation infrastructure on public lands.

1.5 Action Area

The action area is the portion of the administrative boundary of the Bitterroot National Forest that falls within the state of Montana (Appendix A, Map 1). Within the 1,195,544 acre action area (approximately 72% of the total Bitterroot National Forest), private and state lands are interspersed with National Forest System (NFS) lands (Table 1). Only these Forest lands in the action area are included in the analysis of direct and indirect effects, whereas all land ownerships within the action area are included in the analysis of cumulative effects. The action area spans two mountain ranges in west-central Montana: the Bitterroot Mountains to the west and the Sapphire Mountains to the east of the Bitterroot River valley, bisected by highway 93. Elevations range from 3,200 feet at the north end of the Bitterroot Valley to the 10,157 foot summit of Trapper Peak on the south.

This action area encompasses the lands where grizzly bears are designated as "may be present" on the portion of the Forest within Montana (U.S. Department of the Interior, Fish and Wildlife Service 2020a) (Appendix A, Map 3). The Forest also manages 1,179 acres of scattered Forest ownership parcels in the valley bottom that are not part of the action area because they are spatially disjunct from the contiguous Forest land ownership, completely surrounded by private lands, and do not contain enough habitat to support grizzly bear persistence (only 1 parcel contains more than 80 acres).

Congressionally-designated wilderness makes up about 24 % of the action area and contains portions of the Anaconda-Pintler, and Selway-Bitterroot Wilderness Areas. The Forest also contains the Sapphire and Blue Joint wilderness study areas (9%), and inventoried roadless areas (IRAs) are well represented (25%) (**Error! Reference source not found.**, Appendix A, Map 4). In all of these areas, management is guided b y the Wilderness Act (16 U.S.C § 1131-1136), the Montana Wilderness Study Act of 1977 (PL 95-150), or 36 C.F.R § 294, and focuses on maintaining large expanses of un-roaded habitat and results in very low human disturbance due to the remote nature and minimal amount of alteration permitted by law.

Table 1. Percentage of the Action Area (Bitterroot National Forest lands in Montana) in Wilderness Areas, Wilderness Study Areas, and Inventoried Roadless Areas

Area	Sub-Area	Acres of Forest lands in Montana	% of Forest Lands in Montana
Action Area		**1,195,544**	**100%**
	Inside Recovery Zone	245,677	21%
	Outside Recovery Zone	949,867	79%

Forest Wilderness on Bitterroot National Forest in Montana	**All Wilderness**	**286,860**	**24%**
	Anaconda Pintler Wilderness	41,194	3%
	Selway-Bitterroot Wilderness	245,666	21%

Forest Wilderness Study Areas (WSA) and Inventoried Roadless Areas (IRA) on Bitterroot National Forest in Montana	**All Wilderness, WSAs, IRAs**	**405,835**	**34%**
	Allan Mountain IRA	104,186	9%
	Blue Joint WSA	64,710	5%
	Continental Divide National Scenic Trail	312	< 1%
	Lolo Creek IRA	582	< 1%
	Needle Creek IRA	1,111	< 1%
	North Big Hole IRA	3,487	< 1%
	Sapphire WSA	43,326	4%
	Selway - Bitterroot IRA	114,886	10%
	Sleeping Child IRA	21,446	2%
	Stony Mountain IRA	44,080	4%
	Swift Creek IRA	614	< 1%
	Tolan Creek IRA	7,095	1%

While the Forest Plan covers the entirety of Bitterroot National Forest lands within the administrative boundary, this consultation covers the Forest lands in Montana divided into the part of the Forest that is within the Bitterroot Ecosystem, and the part that is outside of the Bitterroot Ecosystem boundary. The U.S. Fish and Wildlife Service has not designated Bear Management Units (BMUs) within the Bitterroot Ecosystem (U.S. Department of the Interior 1993, 1996) and none are applicable or designated for this consultation. BMUs are used as analysis units when analyzing effects to individual grizzly bears in Section 7 consultation within Recovery Zones (Appendix A, Map 5). However, because the Service has not defined BMUs, this BA analyzes effects of the Forest Plan, Travel Management Plan, and Amendment over the entire action area which includes the portion of the Bitterroot Ecosystem in Montana.

The Forest has delineated Grizzly Bear Analysis Units (GBAUs, Appendix A, Map 6) outside of the Bitterroot Ecosystem for the purposes of analyzing effects to individual grizzly bears at a spatial scale that is biologically relevant to the bear. The eastside of the Forest had GBAUs delineated in the BA for the Forest Plan grizzly bear consultation (U.S. Department of Agriculture 2019) and the resulting BO (U.S. Department of the Interior, Fish and Wildlife Service 2019). For this BA, the eastside GBAUs were slightly modified to follow previous efforts (U.S. Department of Agriculture 2020), westside Forest GBAUs were defined, and no GBAUs are defined in the Bitterroot Ecosystem, for the reasons noted above. The action area for this BA consists of hypothetical female home ranges (i.e. GBAUs) of the size suggested by multiple studies (Servheen 1983, Martinka and Kendall 1986, Interagency Grizzly Bear Committee 1987, Blanchard and Knight 1991, Mace and Manley 1993, Mace and Roberts 2012b) and the portion of the Bitterroot Ecosystem in Montana adjacent to the defined GBAUs. GBAUs were analyzed separately, as well as the entire action area (Appendix A, Map 6).

The GBAUs include the suite of seasonal habitats required to support grizzly bear reproduction, although the westside GBAUs are elevationally restricted for the reasons listed above due to the Bitterroot Ecosystem boundary lying directly adjacent to the west. All GBAUs include some higher elevation, steeper terrain that could provide denning habitat, as well as xeric forests and grasslands at lower elevations, and more mesic, productive forest types and wet meadows that are more likely to provide spring and fall food resources. The GBAUs are used for the purpose of calculating secure habitat and

other metrics over an appropriate spatial scale and do not represent actual home ranges or imply that occupancy by male or female grizzly bears is expected or required.

The Forest make the assumption that each individual GBUA is large enough for roughly 1 female grizzly bear home range (Table 2) based on the studies mentioned above. These larger GBAUs reflects the hypothesis that grizzly home ranges are likely to increase in size south of the NCDE because potential grizzly habitat tends to become drier and less productive (Mace and Roberts 2012a). The GBAUs are large enough to evaluate the ability of the habitat to support grizzly bears, but small enough to not obscure the effects of the Forest Plan.

Table 2. Defined Grizzly Bear Analysis Units on the Bitterroot National Forest outside of the Bitterroot Ecosystem

	Total Acres	% of Action Area
Action Area	**1,195,544**	**100%**
Total of all GBAUs	**949,867**	**79%**
Burnt Fork Bitterroot River GBAU	100,079	8%
Lost Horse Creek GBAU	88,090	7%
Lower Bitterroot River GBAU	48,092	4%
Lower East Fork Bitterroot River GBAU	88,612	7%
Lower West Fork Bitterroot River GBAU	101,408	8%
Skalkaho Creek GBAU	65,084	5%
Sleeping Child Creek GBAU	96,568	8%
Upper East Fork Bitterroot River GBAU	105,010	9%
Upper West Fork Bitterroot River East GBAU	105,905	9%
Upper West Fork Bitterroot River West GBAU	92,873	8%
Warm Springs GBAU	58,146	5%

The temporal bounds for the effects analysis is for the duration of the current Forest Plan, or 10 years, whichever occurs first. The plan has been in effect since 1987, and is overdue for revision, and is expected to be revised before 10 years. Longer-term effects to species habitat lasting up to fifty years are discussed in the context of vegetation succession and the effect on habitat changes but not in terms of potential disturbance.

1.6 Consultation History

The grizzly bear was not designated as "may be present" on the Forest until September 7, 2017. The Forest initiated consultation with the Service on May 7, 2019 (U.S. Department of Agriculture 2019) regarding the Forest Plan due to the Service's determination that grizzly bears "may be present" on the portion of the Forest east of highway 93, and the fact that grizzly bear was not addressed in the 1987 Forest Plan. The Service issued a Biological Opinion (BO) in response on July 1, 2019 (U.S. Department of the Interior, Fish and Wildlife Service 2019).

On September 18 2019, the Service designated that grizzly bears "may be present" on all Bitterroot National Forest lands in Montana. On February 14 2020, the Service confirmed that the Bitterroot National Forest could proceed with project-level consultations for grizzly bear without having Forest-plan level consultation for Forest lands in Montana. On May 21 2020, the Forest personnel met with the Service on the need to consult on the Amendment due to the Amendment replacing road density standards. The Service concurred that the Bitterroot National Forest needed to consult on the Amendment language and effects to grizzly bear. On May 26 2020, Bitterroot National Forest met with the Service again to discuss consulting on the Amendment and the need to consult on the Forest Plan due to the

changed designation of the grizzly bears "may be present" on all Bitterroot National Forest lands in Montana. On June 24 2020, a draft Biological Assessment was submitted to the Service for review. On July 15 2020, the Service brought up the issue of the Bitterroot National Forest not having consultation on the Travel Management Plan with respect to grizzly bears because the project was completed before grizzly bears were known to be present on the Forest. On August 17 2020, the Bitterroot National Forest submitted a second draft Biological Assessment to the Service on effects to grizzly bear from continued implementation of the Forest Plan, the Travel Management Plan, and the Amendment. On September 15 2020, the Service responded with additional comments on the draft BA, and the Bitterroot National Forest submitted the final BA for this consultation on September 25 2020.

2.0 Environmental Baseline

2.1 Current Status of Grizzly Bear on the Bitterroot National Forest and Life History

The grizzly bear was listed as a threatened species in the lower 48 states on July 28, 1975. No critical habitat has been designated. The historical range of the grizzly bear in the continental United States extended from the central Great Plains, west to California, and south to Texas and Mexico. Between 1800 and 1975, grizzly bear populations in the lower 48 states declined from over 50,000 to less than 1,000. As European settlement expanded westward, the grizzly bear was extirpated from most of its historical range (U.S. Department of the Interior 1993).

Five areas in Montana, Wyoming, Idaho, and Washington currently support grizzly bear populations: Greater Yellowstone Ecosystem (GYE), Northern Continental Divide Ecosystem (NCDE), Cabinet-Yaak Ecosystem, Selkirk Ecosystem, and Northern Cascades Ecosystem (Appendix A, Map 5). These areas represent a small fraction (less than two percent) of the grizzly bear's historical range (U.S. Department of the Interior 1993).

The grizzly bear recovery plan (U.S. Department of the Interior 1993) identified recovery zones that encompass the above five areas as well as the Bitterroot Ecosystem and the San Juan Ecosystem. The recovery zones (named as "Ecosystems" in the recovery plan and used interchangeably in this document) were delineated to contain a large proportion of federal lands, including wilderness and national park lands that are protected from the influence of many types of human uses and activities occurring on lands elsewhere. Recovery zones are defined as areas that are necessary for the recovery of the species and are to be managed with an emphasis on conserving grizzly bear habitat (U.S. Department of the Interior 1993).

The Bitterroot Ecosystem (U.S. Department of the Interior 1996) is approximately 3,731,733 acres (5,831 mi^2) in size and lies almost entirely within the Selway-Bitterroot Wilderness Area and the Frank Church-River of No Return Wilderness Area. Four national forests have acreage within the Bitterroot Ecosystem: Bitterroot, Payette, Nez Perce-Clearwater, and Salmon-Challis NFs. The Bitterroot Ecosystem overlaps a portion of the west side of the Forest, and makes up approximately 43 percent of the entire Bitterroot National Forest (Table 3) and 20% of the Forest lands in Montana.

Table 3. Bitterroot National Forest inside and outside of the Bitterroot Ecosystem

Area	Sub-Area	Forest Acres	Percent of Forest
Administrative Forest Boundary		**1,664,453**	**100%**
	Inside Recovery Zone	714,586	43%
	Outside Recovery Zone	951,076[1]	57%

[1]This includes the 1,179 acres the Forest manages of scattered Forest ownership parcels in the valley bottom that are not part of the action area because they are spatially disjunct from the contiguous Forest land ownership, completely surrounded by private lands, and do not contain enough habitat to support grizzly bear persistence

The grizzly bear recovery plan (U.S. Department of the Interior 1993) anticipated that grizzly bears can and will exist outside the boundaries of the recovery zones. Only grizzly bears that reside within the recovery zones are crucial to achieving recovery goals. Inside recovery zones, priorities focus on managing and conserving grizzly bear habitat, while outside recovery zones that level of emphasis is not necessary. However, the areas outside recovery zones can play a significant role in supporting movement of bears between recovery areas (Northern Continental Divide Ecosystem Subcommittee 2018). An important factor of successful dispersal of bears enables recolonization of vacant habitat, bolsters small populations such as in the Cabinet-Yaak Ecosystem, and provides genetic connectivity for the isolated population in the Greater Yellowstone Ecosystem.

The current status of grizzly bear in the action area and life history are documented in previous publications and biological assessments and only briefly discussed here. See Biological Assessment for the Bitterroot National Forest Plan (U.S. Department of Agriculture 2019), Dood et al. (Dood et al. 2006), and Montana Fish, Wildlife and Parks (Montana Fish Wildlife and Parks 2013) for recent summaries.

A number of studies over the past half century, including annual aircraft wildlife surveys by state wildlife personnel, black bear studies, DNA hair snares, and remote camera surveys, have been conducted that were designed to or were likely to incidentally identify grizzly bear presence in the Bitterroot Ecosystem; however, no grizzly bears were detected.

The Service systematically surveyed for grizzly bears throughout the northern Bitterroot Mountains between U.S. Highway 12 in Idaho and Montana Highway 200 and between Missoula, Montana, and Avery, Idaho during 2008 and 2009. Barbed wire DNA hair corrals and remote cameras were deployed. No grizzly bears were detected. A lack of detection does not provide conclusive evidence that bears were absent, but it does indicated no more than a few individuals occurring at very low densities. The Service considers the Bitterroot Ecosystem to be unoccupied (U.S. Department of the Interior 2011).

Two transient grizzly bears have been confirmed in the Bitterroot Mountains on the Forest in recent years. A verified grizzly bear traveled through the foothills of the Bitterroots as far south as Florence in May 2014 before turning around and heading back north. Augmentation grizzly #927 spent several months exploring the Bitterroot Divide as far south as Hamilton in late summer/early fall 2019 before returning to his starting point in the Cabinet Mountains to den. No other confirmed grizzly bear detections have occurred in the Bitterroot Mountains in recent decades.

There are only two relatively recent confirmed grizzly bear occurrences in the Sapphire Mountains. In September 2002 a grizzly was videotaped feeding on a moose gut pile in the Rock Creek drainage, appeared on private property the next day on Sunset Bench about 4 miles southeast of Stevensville, and was then thought to have returned to the east side of the Rock Creek drainage (Jonkel 2018). The exact dispersal route is unknown, but it likely traveled near the northern edge of the Forest. In October 2012 grizzly tracks were photographed and verified on a road in the head of Sleeping Child Creek (Jonkel 2018). One other recent confirmed grizzly bear occurrence was a young male grizzly trapped at the Whitetail Golf Course in the midst of the Lee Metcalf National Wildlife Refuge about 2 miles north of Stevensville in late October 2018. This bear was almost certainly a dispersing male that likely came from the lower Blackfoot River area and crossed the Sapphires east of Florence (Jonkel 2018), but its actual origin and route are unknown at this time.

2.2 Existing Conditions in the Action Area

A forest plan provides an integrated plan for land and resource management. A list of the forest plan components, including goals, objectives, and standards, that are relevant to management for grizzly bears that may occur in the action area is provided in Appendix B.

In previous consultation discussions with the Service (U.S. Department of Agriculture 2019), an agreement was reached to analyze six programs or activities that are most likely to have an effect on grizzly bears that move into or through the Forest. Of these six, the most important factors were motorized routes, domestic livestock grazing, and management of food/attractants. Vegetation management, developed recreation sites, and minerals and energy development were also addressed.

For this analysis of the existing conditions, the Forest analyzed motorized access, domestic livestock grazing, management of food/attractants, developed recreation sites, vegetation management, minerals and energy, cover/grizzly bear habitat, denning-specific habitat, grizzly bear food availability, and grizzly bear/human interactions. The analysis focuses on the effects of existing conditions and potential implementation of the Forest Plan, Travel Management Plan, and the Amendment in the action area on any grizzly bears that may be present, as well as considering the ability of the area to contribute to connectivity between grizzly bear recovery zones.

The action area includes portions of wilderness areas, Wilderness Study Areas (WSAs), and Inventoried Roadless Areas (IRAs) (Table 1). The continuation of these areas beyond the action area provides extensive secure areas for grizzly bear in the Selway-Bitterroot (1,348,662 acres), Frank Church-River of No Return (2,359,892 acres), and Anaconda-Pintler (158,753 acres) Wilderness Areas; the Sapphire Wilderness Study Areas (94,742 acres); and additional Inventoried Roadless Areas that lie adjacent to the action area. The Selway-Bitterroot Wilderness extends for another 33 miles to the west and 17 miles to the north of the action area, and it lies immediately north of the Frank Church-River of No Return Wilderness Area that extends another 30 miles to the south. Even though a portion of these areas are outside the action area, they provide additional contiguous secure areas for grizzly bears in the action area to disperse into.

2.2.1 Motorized Access and the Travel Management Plan

Motorized access has long been recognized as a major factor affecting grizzly bears, and roads were deemed the most imminent threat to grizzly habitat (U.S. Department of the Interior 1993). One of the components of the Grizzly Bear Recovery Plan (U.S. Department of the Interior 1993) step-down approach to recovery recommended conducting research to determine the effects of various road densities on grizzly bear habitat use and human-caused bear mortality. This direction stemmed much research related to motorized route density and subsequent effects to grizzly bears. A road-density threshold of 0.6 km/km^2(0.96 miles/mile^2) first identified by Mace et al. (1996) was largely supported by science as it was found to be the approximate conditions that surviving and reproducing female bears selected for in their home ranges (Mace et al. 1996, Wakkinen and Kasworm 1997). Other research found similar responses in other areas ranging from 0.5 km/km^2(0.8 miles/mile^2) (Lamb et al. 2018) to lower female survival and reproduction in areas with road densities great than 0.75km/km^2 (1.2 miles/mile^2) (Boulanger and Stenhouse 2014). Proctor et al. (2017) found grizzly bear densities to be approximately three times higher in habitats with road densities < 0.6km/km^2 relative to habitats with road densities above this threshold.

From this research, Conservation Strategies used motorized route density as one of the metrics used to analyze various effects to grizzly bears. Although road density provides a useful threshold to describe human-caused effects to grizzly bears based on existing literature, road density alone fails to consider traffic volume, proximity to forage resources and how road placement affects habitat patch size (Proctor et al. 2020). Furthermore, the Grizzly Bear Recovery Plan (U.S. Department of the Interior 1993) noted that bear researchers agree that the most crucial element in grizzly recovery is securing adequate effective habitat for bear populations, which include food, cover, denning habitat, solitude, and space (Craighead and Mitchell 1982).

When the revised Grizzly Bear Recovery Plan was finalized, the Bitterroot Ecosystem had been loosely defined, but the Bitterroot Ecosystem Recovery Plan Chapter was not published until 1996. No grizzly bears were known to occur on the Forest (U.S. Department of the Interior, Fish and Wildlife Service 1996) at the time the Bitterroot National Forest completed the Travel Management Plan Environmental Impact Statement (EIS) in 2016 (U.S. Department of Agriculture 2016b) in accords with the National Environmental Policy Act (NEPA). The NEPA process drives the evaluation of biological resources in the project area concurrent and interdependent with the ESA section 7 consultation process. The nuance is important to distinguish in that ESA consultation with the Service is an important component to a full NEPA analysis. While the Travel Management Plan (U.S. Department of Agriculture 2016b) adhered to NEPA, it did not have to engage in Section 7 consultation for grizzly bears because grizzly bears were not known to be present. The EIS (U.S. Department of Agriculture 2016b) analyzed four different alternatives and the Record of Decision (U.S. Department of Agriculture 2016a) selected a preferred alternative out of the four, of which none were legally bound to analyze the effect of the Travel Management Plan on grizzly bears (Appendix E).

The Record of Decision (U.S. Department of Agriculture 2016a) designated routes and their appropriate use, including season restrictions. Most of the changes made in the Travel Management Plan were administrative changes and subsequently displayed on Motor Vehicle Use Maps (MVUMs) that serve as the official route guidance for recreationalist to use while visiting the Forest. Some of the changes require additional NEPA decisions from specific project actions and may not have yet been completed (see EIS, U.S. Department of Agriculture 2016b). The Travel Management Plan analyzed motorized routes using linear route densities but because grizzly bears were not known to occur, no informal or formal consultation was required for grizzly bear.

For this analysis, the existing linear motorized route density within each GBAU and action area (including the portion of the Bitterroot Ecosystem in Montana) was analyzed and included all existing navigable motorized routes (excluding decommissioned routes) (columns 4 and 5 in Table 4 below); additionally motorized routes only open to public use were analyzed (columns 6 and 7 in Table 4 below). This initial analysis includes (1) linear route density of all roads (including those restricted to the public, i.e. open to administrative access only) and (2) routes only open to public use based on the MVUM maps produced from the Travel Management Plan. Some research has suggested that roads restricted to the public were also avoided by bears to some degree (Mace et al. 1996, Wakkinen and Kasworm 1997), and other research has suggested that habitats near restricted roads were used at similar levels to unroaded areas (Northrup et al. 2012). These two comparable analyses were included to provide context between routes currently open to public motorized use and all routes currently known on the landscape.

Table 4. Linear motorized route density for each GBAU and action area

Area/GBAU Name	Acres	Square Miles	Linear Route Miles including Closed Roads	Linear Route Density (miles/mile^2)	Linear Route Miles Open to Public Use Only	Linear Route Density (miles/mile^2)
Total Action Area	**950,315**	**1,484.9**	**3,256.0**	**2.2**	**2,567.3**	**1.7**
Burnt Fork Bitterroot River GBAU	100,140	156.5	329.4	2.1	260.9	1.7
Lost Horse Creek GBAU	88,114	137.7	182.0	1.3	164.9	1.2
Lower Bitterroot River GBAU	48,107	75.2	149.2	2.0	105.5	1.4
Lower East Fork Bitterroot River GBAU	88,665	138.5	385.2	2.8	306.6	2.2

Lower West Fork Bitterroot River GBAU	101,437	158.5	438.2	2.8	360.3	2.3
Skalkaho Creek GBAU	65,126	101.8	192.5	1.9	163.8	1.6
Sleeping Child Creek GBAU	96,619	151.0	569.7	3.8	383.7	2.5
Upper East Fork Bitterroot River GBAU	105,094	164.2	275.3	1.7	210.1	1.3
Upper West Fork Bitterroot River East GBAU	105,946	165.5	299.3	1.8	237.4	1.4
Upper West Fork Bitterroot River West GBAU	92,892	145.1	216.5	1.5	180.8	1.2
Warm Springs GBAU	58,175	90.9	218.7	2.4	191.7	2.1

Secure habitat process and the intersection of motorized routes

With respect to grizzly bears, habitat that is considered 'secure' is generally considered to be physically removed from areas of recurring human use. For the purposes of conservation and recovery of grizzly bear populations, secure habitat has commonly been defined as areas of a specified minimum size that are beyond a specified distance from motorized routes (Mace et al. 1996, Boulanger and Stenhouse 2014, McLellan 2015, Proctor et al. 2018). Measures and recommendations of the appropriate size of blocks of potentially secure habitat, minimum distance necessary from motorized routes, and the types of motorized routes that should be excluded for these habitat blocks to provide security have varied in the scientific literature as well as in management practice (Proctor et al. 2018). The intersection between secure habitat and route density occurs due to multiple roads in a defined area that potentially widens an area of influence from motor vehicles, along with associated mortality factors such as bear-vehicle collisions, potential lawful or illegal hunter harvest, and interaction with humans. By identifying secure habitat, the effects of route density are inclusive to any secure habitat analysis effects because human use of public lands is highly correlated to the availability and distribution of motorized access. Jaeger (2000, et al. 2006) found the distribution and configuration of roads can influence secure habitat patch sizes significantly. For instance, even in a GBAU with overall low road density, there may be patches of high road density interspersed with patches of low road density or even unroaded areas, thus influencing how grizzly bears might access or use the landscape.

Studies have shown that female grizzly bears selected for, and survived better in, areas with greater secure habitat (Mace et al. 1996, Wakkinen and Kasworm 1997, Gibeau et al. 2001, Schwartz et al. 2010). Grizzly bear secure habitat is defined slightly differently in grizzly bear literature and in different conservation strategies. In addition to road densities, female home-range selection and/or survival also has related to the proportion of habitat > 500 meters from an open or gated road, often termed 'secure habitat' (Proctor et al. 2020). In the Flathead Valley of Montana, McLellan (2015) concluded that the most important summer and early autumn habitat for grizzly bears was higher elevation, post-forest-fire areas, where huckleberries were plentiful, and habitat was essentially roadless. Schwartz et al. (2010) determined that secure habitat within female home ranges had a larger influence on their survival than road densities. Multiple studies concluded that, in general, areas with a higher percentage of secure habitat showed greater selection for and survival of female grizzly bears (Mace et al. 1996, Wakkinen and Kasworm 1997, Gibeau et al. 2001). Proctor et al. (2020) concluded that road density had more influence on survival as the proportion of secure habitat within female home ranges decreased. The amount of secure habitat metric more adequately represents the potential effects related to motorized access as it provides a more accurate indication of the spatial mix of motorized routes and secure habitat (Proctor et al. 2020).

To determine the most appropriate measures of secure habitat to use for the purposes of analysis and consultation, the Bitterroot National Forest considered methods used in both the NCDE and GYE, as well as the data currently available. This process, and measures chosen for analysis are described in Appendix F, along with supporting rationale. The Forest anticipates that future analyses of project-level actions may adjust these parameters or use alternative parameters, as deemed appropriate at the time of those future analyses, and based on recommendations from the Service, the Regional office, other interagency discussions and recommendations, and/or new science or new understanding of existing science. Additionally, adjustments to the "baseline" levels of the parameters used in the current analysis may be made in the future to reflect better data and mapping rather than actual changes on the ground.

The analysis in Appendix F compares differing amounts of secure habitat based on pre- and post-Travel Management Plan administrative designations. For the final analysis, the Forest determined to use all existing routes (i.e. any road that is drivable including routes: open to any public motorized vehicle, any restricted routes, administrative access only roads/routes, and undetermined routes, that exist in the Forest GIS database) buffered by 500 meters on either side of the center line.

Due to limitations with the current motorized access data in portions of the action area and in order to be conservative when analyzing effects, all known existing routes (as defined above) were buffered to delineate secure habitat. As such, the estimates of secure habitat (Appendix A, Map 7, Table 5) may underestimate actual secure habitat that exists on the ground because some routes that may be physically impassable to motor vehicle use were buffered and excluded from secure habitat. Accordingly, the secure habitat acreages provided are useful mainly as a broad index of what may be available to grizzly bears that may use the action area. By including all known existing route prisms, the analysis captures the current minimum amount of secure habitat available in the action area. If in the future, any one of the existing route prisms is used, effects to grizzly bear secure habitat will have already been considered. If other routes are discovered that are currently not captured in the Forest GIS database, the Forest will make corrections to this existing condition baseline. Newly discovered roads may or may not affect the existing amount of secure habitat depending on their location.

Table 5. Secure habitat by GBAU and within the Bitterroot Ecosystem on the Bitterroot National Forest lands in Montana

Area	Total Acres	Secure Habitat	% Secure Habitat by Area
Total Action Area	**1,195,992**	**627,205**	**52%**
Bitterroot Ecosystem within Montana	245,677	244,737	20%
Total for all GBAUs	**950,315**	**382,468**	**32%**
Burnt Fork Bitterroot River GBAU	100,140	32,580	33%
Lost Horse Creek GBAU	88,114	50,150	57%
Lower Bitterroot River GBAU	48,107	20,135	42%
Lower East Fork Bitterroot River GBAU	88,665	12,662	14%
Lower West Fork Bitterroot River GBAU	101,437	35,032	35%
Skalkaho Creek GBAU	65,126	29,548	45%
Sleeping Child Creek GBAU	96,619	13,568	14%
Upper East Fork Bitterroot River GBAU	105,094	62,356	59%
Upper West Fork Bitterroot River East GBAU	105,946	46,621	44%
Upper West Fork Bitterroot River West GBAU	92,892	57,980	62%
Warm Springs GBAU	58,175	21,836	38%

The impacts of winter motorized activities on hibernating bears are not well studied. In a review of the limited information available on black, brown (grizzly), and polar bears, Linnell et al. (2000) reported that bears readily den within 0.6–1.2 mi of human activity (roads, habitations, industrial activity) and appear to be undisturbed by most activity that occurs at distances farther than 0.6 mi. They cautioned that human activity within 0.6 mi might lead to den abandonment, especially early in the denning season. Anecdotally, litter abandonment by grizzly bear mothers due to snowmobiling activity has not been documented in the lower 48 states (Hegg et al. 2010), nor have adverse effects on bears from snowmobiles been substantiated (Mace and Waller 1997a).

The Forest Plan does not limit over-snow vehicle use specifically in the late spring period, but the Travel Management Plan increased large quiet areas that are free from disturbance by over-snow vehicles from 748,981 seasonal and non-restricted acres pre-plan to 543,840 seasonal and non-restricted acres post-plan (U.S. Department of Agriculture 2016a).

Within the Action Area, 52% (623,543 acres/1,195,992 acres) have over-snow vehicle restrictions. Ninety three percent (93%) is restricted year round, while 7% is restricted from October 15-December 1st. Seventy five percent (75%) of all secure habitat in the Action Area is in areas that have year-round over-snow vehicle restrictions (Appendix A, Map 8). There are some large, higher elevation areas that contain potential denning habitat across the Forest (in wilderness areas, WSAs, and IRAs) where the use of motorized over-snow vehicles is prohibited. See section 2.2.8 below for more information on denning habitat and over-snow vehicle existing conditions.

2.2.2 Domestic Livestock

When the grizzly bear was listed in 1975, the Service identified a concern about livestock use of national forests "unless management measures favoring the species are enacted" (40 FR p. 31734). Impacts to grizzly bears from livestock operations potentially include competition for preferred forage, displacement of bears due to livestock-related activity, and direct mortality due to control actions as a consequence of livestock depredation or learned use of bear attractants such as livestock carcasses and feed.

Grizzly bears frequently coexist with large livestock such as adult cattle without preying on them, but are more likely to attack and kill smaller animals such as domestic sheep, domestic goats, calves, or chickens (Knight and Judd 1983, Anderson et al. 2002); however, recent management reports from MFWP have documented large livestock depredations (cattle), grizzly bear-human conflicts due to boneyards from ranching operations, and management removals due to these depredations (MTFWP 2019). If repeated depredations occur, managers may respond by relocating bears or removing them from the population. Thus, areas with small domestic livestock, and potentially areas with larger livestock, have the potential to become population sinks(Knight et al. 1988). Because of the increased risk to grizzly bears posed by domestic sheep and other small livestock, the Interagency Grizzly Bear Guidelines (Interagency Grizzly Bear Committee 1986) emphasized the desirability of phasing out these types of allotments.

There are no domestic sheep allotments on the Forest. There are a total of 18 cattle grazing allotments currently on the Forest, of which 11 are currently active (Appendix A, Map 9). These allotments cover 193,706 acres, or approximately 16% of the action area (Table 6).

Table 6. Bitterroot National Forest Livestock Allotments

Allotment	Acres	# of head	Permitted Season	Approved NEPA	Status[1]
Ambrose	1676	25	06/15-08/31	2012	Vacant
Bass Creek	1320	50	06/01-07/31	1996	Active
Bunch	686	100	05/16-06/10	1998	Active
Camp Reimel	10457	120	06/01-09/30	1991	Active

Coal Creek	3930	25	6/1-9/30	2008	Vacant - Reserve
East Fork (Daniels & Horse Pasture) Sula Peak	21700	EF 400 AUMs, SP 250 AUMs alternate years	06/01-10/15 break during hot season	2010	Active
Gold Creek	2582	29	07/15-10/15	1992	Vacant
Harlan Gulch	2881	60	06/01-07/31	1995	Active
Little Sleeping Child	22297			2007	Reserve
Meadow-Tolan	35447	275	06/11-09/30	1998	Active
Medicine Tree	13966	50	06/01-09/30	1995	Active
N Sleeping Child	7837	10	06/01-09/30		Active
Piquett	14967			2007	Reserve
Shirley	2815	130	05/16-06/10	1998	Active
Skalkaho	7377	45	06/01-09/30	1999	Active
Sweathouse-Gash	1015	4	07/01-10/31	2006	Active
Trapper	21480	90	06/15-09/30	1993	Vacant
Waugh-Andrews, Warm Springs	21273	330 AUMs	06/01-09/30	2009 1995	Vacant - Reserve

[1] Reserve with no season or # of head allows allotment it to be used for 1 year only as an alternate allotment because a regular allotment is rested due to fire or drought per NEPA analysis. Vacant-Reserve currently have NEPA, but are Vacant and management allows Reserve use only.

2.2.3 Management of food/attractants

Improperly stored food, garbage, livestock/pet feed and carcasses, and other bear attractants pose a significant risk of habituating grizzly bears to human presence and/or enticing grizzly bears to consume human food, garbage, and other attractants. Food-conditioned grizzly bears learn to seek out and enter unsecured garbage receptacles, sheds, and other buildings in search of a food reward. The accessibility of attractants often leads to the mortality of a food-conditioned grizzly bear by management removal or by people defending their life or property. Bears are particularly susceptible to food conditioning during years of poor natural food production such as a berry crop failure. Measures that make attractants such as food, garbage, and livestock carcasses inaccessible through proper storage or disposal are very effective in reducing human-grizzly bear conflicts and the potential for injuries or mortalities.

The Forest Plan, Travel Management Plan, and the Amendment do not contain direction regarding the management of bear attractants. On NFS lands, requirements for proper storage of food, garbage, or other attractants are established and enforced through issuance of a special order(s), rather than through the forest plan. At this time, the only food storage order in effect on the Forest is for the Anaconda-Pintler Wilderness area (Appendix D).

2.2.4 Developed recreation sites

Developed recreation sites are sites or facilities on federal lands with features that are intended to accommodate public use and recreation. Examples include campgrounds, rental cabins, fire lookouts, summer homes, and visitor centers. Developed recreation sites can impact bears through temporary or permanent habitat loss and displacement, but the primary concern is human-grizzly bear conflicts caused by unsecured bear attractants, habituation of bears to human presence, and food conditioning of bears, which frequently lead to grizzly bear mortality or removal from the ecosystem (Knight et al. 1988). Developed recreation sites that support overnight public use are thought to have a higher potential to increase both the levels of bear attractants and grizzly bear mortality risk (Northern Continental Divide Ecosystem Subcommittee 2018).

Within the action area, there are currently 27 developed sites that provide for overnight stays, for recreational or administrative use. Recreation use sites include 21 campgrounds and 6 lookouts and cabins

that are available for the public to rent (Wood's Cabin, Gird Point Lookout, East Fork Guard Station, TwoGood Cabin, McCart Lookout, Medicine Point Lookout) (Appendix A, Map 10). Eleven campgrounds and 1 cabin have garbage service and are outfitted with bear-resistant trash containers. All of the other campgrounds and cabin/lookout rental sites are required pack it in/pack it out, with no garbage service provided.

In addition, there are scattered administrative sites that include residences, bunkhouses, and staffed lookouts during the fire season. The residences and bunkhouses are located on Ranger District compounds and have garbage service.

2.2.5 Vegetation management

Grizzly bears use numerous different habitats for foraging. Use tends to be more frequent in areas that offer some type of hiding cover nearby, particularly during daylight hours (Aune and Kasworm 1989, Mace and Waller 1997b). Waller (1992) reported that grizzly bears avoided lower-elevation, more accessible harvested stands, as well as stands less than 30–40 years old where the vegetation had not recovered enough to provide cover. Vegetation management may alter the amount and arrangement of cover and forage available to bears. Timber harvest and fire can locally increase bear foods by stimulating the growth of grasses, forbs, and berry-producing shrubs. Associated roads and human activity can negatively affect grizzly bears by disturbing or displacing bears during logging activities and by increasing mortality risk (Zager et al. 1983).

The Bitterroot Forest Plan identified 389,820 acres as suitable for timber production in Montana (33% of the action area). The planned annual allowable sale quantity was projected to be 33.37 million board feet, to be harvested each year from approximately 3,647 acres in management areas 1, 2, 3a, 3b and 3c (Appendix B). Forest plan monitoring data show that actual timber harvest levels have been well below the projections made in 1987. In 2014 and 2015, for example, the Forest harvested timber on 982 acres and 1,072 acres, respectively, less than 30 percent of the projected annual harvest acres (U.S. Department of Agriculture 2016c). The emphasis of the timber harvest program has been the treatment of hazardous fuels, particularly in the wildland-urban interface, and salvage of bark beetle-killed trees.

Wildfire has a strong influence on the age distribution and spatial arrangement of forest vegetation. Although there is substantial variation year-to-year, from 1996 to 2016 a total of 496,354 acres of the Forest were burned by wildfires, or an average of about 23,635 acres/year.

The combination of wildfires and active vegetation management (timber harvest, fuels treatment, and prescribed fire) is expected to continue to recruit early forest successional stages that produce a variety of bear foods while maintaining a mosaic of food and cover.

2.2.6 Energy and mineral development

Energy (specifically oil and gas) and mineral development may increase grizzly bear mortality risk from associated motorized use, habituation to human presence, and/or increased human-grizzly bear encounters and conflicts. Energy and mineral development activities may also result in permanent habitat loss, habitat fragmentation, and displacement of bears.

The production of oil and natural gas on federal lands is conducted through a leasing process under the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (PL 100–203). Mineral development refers to surface and underground hard rock mining and coal production, which is regulated by permits on National Forest System lands under the Mining Act of 1872, as amended through PL 103–66. The Mineral Materials Act of 1947, as amended through PL 96–470, provides for the sale or public giveaway of certain minerals such as sand or gravel.

Currently there is no gas or oil development occurring on the Forest (U.S. Department of Agriculture 2014).

There are numerous mining claims on the Forest. A listing for Ravalli County shows nearly 100 claims on National Forest system lands for dozens of different minerals (source: http://www.us-mining.com/montana/ravalli-county). Although there are many active mining claims on the Forest, at this time there are no active mining operations. Minor activities such as surveying and collecting samples on a claim on NFS lands are allowed at any time, but no activities such as construction of roads, building cabins, or caching of food or equipment are authorized. Before an active operation could begin, the claimant would have to file a notice of intent and a plan of operations with the Forest Service. A plan of operations would trigger the NEPA process and ESA Section 7 consultation. At this time there are no notices of intent or plans of operation on the Forest.

The Forest receives numerous requests for riprap material, sand, gravel, and decorative/landscaping stone. Common use and community pit designations are an effective way of meeting this need while ensuring that management plans are developed, and reclamation funds are available. Four pit/collecting areas on the Forest are open to the public: Ambrose, Upper Burnt Fork, Railroad, and Alta Shale. Gravel pits used by the Forest for administrative use include the Lost Horse, Nez Perce Roadside, Nez Perce Borrow (Pete Creek), Jim Hell, Rombo, and Springer Gulch Pits. Five miscellaneous roadside borrow areas, and the Piquett Creek Road roadside borrow area are also used to provide rock for administrative use.

2.2.7 Availability of cover related to grizzly bear habitat

Grizzly bear available habitat analysis based on Mace et al. (1996) was modeled for the action area and for each GBAU using vMap analysis of recent satellite imagery based on vegetation type and canopy cover (Table 7, Appendix A, Map 11).

Table 7. Availability of cover related to grizzly bear habitat by GBAU on the Bitterroot National Forest

Area	Total Acres	% of Action Area	Grass/Forb Vegetated	% of Total Area	Sparsely Vegetated	% of Total Area	Shrub	% of Total Area	Tree, < 25% Canopy Closure	% of Total Area	Tree, >25% Canopy Closure	% of Total Area
Total Action Area	**1,195,992**	**100**	**220,099**	**18**	**107,115**	**9**	**15,278**	**1**	**131,151**	**11**	**715,811**	**60**
Bitterroot Ecosystem within Montana	245,677	21	9,653	4	77,774	32	8,472	3	40,831	17	106,992	44
Total for all GBAUs	**950,315**	79	**210,420**	**18**	**29,339**	**2**	**6,804**	**1**	**90,304**	**8**	**608,759**	**51**
Burnt Fork Bitterroot River GBAU	100,140	8	18,655	19	3,937	4	1,101	1	7,750	8	68,611	69
Lost Horse Creek GBAU	88,114	7	3,512	4	14,776	17	1,501	2	11,350	13	55,673	63
Lower Bitterroot River GBAU	48,107	4	5,453	11	3,153	7	474	1	4,418	9	34,508	72

Lower East Fork Bitterroot River GBAU	88,665	7	31,218	35	380	0	921	1	10,546	12	44,706	50
Lower West Fork Bitterroot River GBAU	101,437	8	6,421	6	1,371	1	205	0	10,672	11	82,168	81
Skalkaho Creek GBAU	65,126	5	24,739	38	781	1	160	0	5,194	8	34,148	52
Sleeping Child Creek GBAU	96,619	8	41,060	42	154	0	1,026	1	6,283	7	47,917	50
Upper East Fork Bitterroot River GBAU	105,094	9	19,386	18	859	1	345	0	7,458	7	76,436	73
Upper West Fork Bitterroot River East GBAU	105,946	9	20,295	19	1,893	2	522	0	8,494	8	74,493	70
Upper West Fork Bitterroot River West GBAU	92,892	8	20,524	22	1,330	1	158	0	11,869	13	58,808	63
Warm Springs GBAU	58,175	5	19,157	33	706	1	392	1	6,269	11	31,292	54

[1] Percent totals in the green boxes are total acres in all GBAUs combined divided by total Bitterroot National Forest lands in Montana acres. For example, the total of all GBAU acres of Trees < 25% Canopy Cover is 8% of all acres on the Forest lands in Montana, where 11% of all acres of the Forest lands in Montana are Trees < 25% Canopy Cover. This reflects that designated GBAUs do not encompass the entire Forest lands in Montana, only areas in the State of Montana outside of the Bitterroot Ecosystem.

Grass/forb foraging habitat is widely dispersed throughout the action area and comprises 18% of all cover acreage, although some individual GBAUs are lacking (Lost Horse and Lower West Fork Bitterroot GBAUs). Some of the grass/forb openings are located in areas burned over the past few decades and may only provide limited spring forage opportunities for bears due to lingering snowpack. These fire-created openings are temporary and will cease to be classified as grass/forb vegetated once conifer regeneration advances.

Areas classified as shrub types comprise 1% of all habitat types, are limited throughout the action area, and are mostly riparian shrub communities along open stretches of the numerous rivers and creeks found throughout the Forest. The east fork Bitterroot River, Camp Creek, Cameron Creek, Hughes Creek, and Blodgett Creek all have larger patches of shrub habitat found in the GBAUs.

Areas classified as Tree < 25% Canopy Cover are forested but have open conifer overstories and comprise 11% of the action area. The Lower East Fork, Lost Horse Creek, and Upper West Fork Bitterroot River West GBAUs have the most of these habitat types and typically exhibit grass/forb or low shrub understories (depending on aspect and elevation) that may provide a reduced density of forage plants compared to openings.

Areas classified as Tree > 25% Canopy Cover comprise 60% of the action are and are forested but have dense conifer overstories that may limit the amount of grass/forb or shrub understories. This habitat type is the most abundant across the Forest and all GBAUs due in part to the numerous IRAs and wilderness areas, suppression of wildfires, and historic logging practices of past decades that have not been replicated since.

Areas classified as water/urban/other are not displayed in the table due to these areas comprising less than 1% of the total action area and less than 1% of each GBAU.

Areas classified as Grass/Forb, Sparsely Vegetated, or Tree < 25% Canopy Cover generally do not provide hiding cover for grizzly bears. Areas classified as Shrub generally do provide hiding cover for grizzly bears because the density and height of the shrubs in these areas is adequate to conceal a grizzly bear at 200'. Areas classified as Tree > 25% typically are more important for providing cover than forage, and generally do provide hiding cover for grizzly bears due to a high number of boles/acre, low branches, shrubs (at mid to upper elevations) and pockets of regenerating trees.

2.2.8 Denning Habitat

Grizzly bear dens in western Montana typically occur at elevations between 5,900-6,600 feet and at slopes greater than fifty percent in open and open-timbered areas on western, northern or eastern aspects (Dood et al. 2006). There are approximately 84,261 acres (7% of the total action area) of modeled denning habitat (based on these parameters) on NFS lands within the action area (Table 8). Approximately 62% of this modeled denning habitat is within the Bitterroot Ecosystem, although GBAUs do have scattered denning habitat across each area, with the exception of the Lower East Fork Bitterroot River and the Sleeping Child Creek GBAUs (Appendix A, Map 12). There have been no grizzly bear dens identified in the action area.

Of all modeled denning habitat, 85% (71,550acres/84,261 acres) is contained in areas restricted to over-snow vehicles year round. The remaining modeled denning habitat that lies outside of areas restricted to over-snow vehicles is mostly concentrated in the Allan Mountain and Sleeping Child Inventoried Roadless areas within the Upper West Fork East, Warm Springs, and Skalkaho GBAUs. While over-snow vehicle travel is allowed in these areas, other motorized access is limited, thus affording these potential denning areas some level of protection from spring disturbance in years of low snowpack.

Table 8. Availability of grizzly bear habitat by GBAU on the Bitterroot National Forest

Area	Total Acres	% of Forest	Acres Denning Habitat	% of Total
Action Area	1,195,992	100	84,261	7%
Bitterroot Ecosystem within Montana	245,677	21	52,269	21%
Total for all GBAUs	**950,315**	79	**31,991**	**3%**
Burnt Fork Bitterroot River GBAU	100,140	8	2,623	3%
Lost Horse Creek GBAU	88,114	7	7,562	9%
Lower Bitterroot River GBAU	48,107	4	2,233	5%
Lower East Fork Bitterroot River GBAU	88,665	7	376	< 1%
Lower West Fork Bitterroot River GBAU	101,437	8	3,339	3%
Skalkaho Creek GBAU	65,126	5	2,271	3%
Sleeping Child Creek GBAU	96,619	8	938	1%
Upper East Fork Bitterroot River GBAU	105,094	9	4,435	4%
Upper West Fork Bitterroot River East GBAU	105,946	9	4,130	4%
Upper West Fork Bitterroot River West GBAU	92,892	8	2,629	3%
Warm Springs GBAU	58,175	5	1,453	2%

[1] Percent totals in the green boxes are total acres in all GBAUs combined divided by total Bitterroot National Forest lands in Montana acres. This reflects that designated GBAUs do not encompass the entire Forest lands in Montana, only areas in the State of Montana outside of the Bitterroot Ecosystem.

2.2.9 Food availability

VMap analysis estimates there are approximately 29,566 acres (2%) of the action area dominated by whitebark pine (Table 9). Most of which is located at higher elevations in the Bitterroot Ecosystem, with a few larger patches in the Upper West Fork Bitterroot River West, and Upper East Fork Bitterroot GBAUs (Appendix A, Map 13). Whitebark pine would not be considered a significant food source in the action area largely attributed to declines in the species from blister rust, mountain pine beetle, and large wildfires.

Table 9. Availability of Whitebark Pine by GBAU on the Bitterroot National Forest

Area	Total Acres	% of Action Area	PIAL Cover	% of Action Area
Total Action Area	1,195,992	100%	29,566	2%
Bitterroot Ecosystem within Montana	245,677	21%	7,619	3%
Total for all GBAUs	**950,315**	**79%**	**14,991**	**2%**
Burnt Fork Bitterroot River GBAU	100,140	8%	398	1%
Lost Horse Creek GBAU	88,114	7%	638	< 1%
Lower Bitterroot River GBAU	48,107	4%	323	1%
Lower East Fork Bitterroot River GBAU	88,665	7%	0	1%
Lower West Fork Bitterroot River GBAU	101,437	8%	1,482	< 1%
Skalkaho Creek GBAU	65,126	5%	472	1%
Sleeping Child Creek GBAU	96,619	8%	103	1%
Upper East Fork Bitterroot River GBAU	105,094	9%	4,251	< 1%
Upper West Fork Bitterroot River East GBAU	105,946	9%	2,679	4%
Upper West Fork Bitterroot River West GBAU	92,892	8%	3,761	3%
Warm Springs GBAU	58,175	5%	882	4%

[1] Percent totals in the green boxes are total acres in all GBAUs combined divided by total Bitterroot National Forest acres. This reflects that designated GBAUs do not encompass the entire Forest lands in Montana, only areas in the State of Montana outside of the Bitterroot Ecosystem.

Determining the amount, spatial location, and utility of avalanche chutes is complex. Recent research has attempted to use GIS to map avalanche chutes, risk, and run out areas (Sykes et al. 2018, McCollister and Birkeland 2006). There are no mapped avalanche chutes on the Forest; however, abundant avalanche chutes exist within the action area but are confined to higher elevations near the ridges that form the headwaters of creeks. These areas provide abundant spring forage plants and cover for bears, but the largest percentage of the terrain in the action area is most likely within the Bitterroot Ecosystem. Within GBAUS, it is likely that the Upper East Fork Bitterroot River, Skalkaho Creek, Upper West Fork Bitterroot River East and West, and Lost Horse Creek GBAUs also contain multiple avalanche chutes and run out areas.

Lower elevation spring foraging areas for grizzly bears within the action area are most likely to occur along the extensive wet riparian meadows (section 2.3.7).

Vegetation surveys across the action area have indicated that huckleberries are numerous and well distributed throughout, but usually limited to scattered patches on cooler aspects. Huckleberries may become more common with elevation gain in the IRAs and Bitterroot Ecosystem, and they likely provide a substantial food resource within the project area.

Montana Fish, Wildlife and Parks elk trend count data show that most elk populations in the action area have steadily increased over the past several decades. As a result, elk would be available as a potential food source in the action area during calving season in early summer and again in the fall when grizzly bears key in on elk gut piles and wounded elk from hunting recreation.

2.2.10 Grizzly Bear/Human Interactions

There have been no known grizzly bear/human conflicts in the action area in the since grizzly bears were extirpated in the mid-1930s.

3.0 Effects of the Action

3.1 Effects of continued implementation of the Forest Plan, Travel Management Plan, and the proposed Amendment

A forest plan provides an integrated plan for land and resource management. The effects of continued implementation of the Forest Plan were discussed in detail in the previous Biological Assessment for the Bitterroot National Forest Plan (U.S. Department of Agriculture 2019). While that BA only analyzed effects to the east side of the Forest east of Highway 93, many of the effects would be similar or the same across the Forest. They are revisited here with necessary inclusions for any differences from the previous assessment.

The number of grizzly bears using the action area is very low to none, but due to the proximity to other established populations, numbers of grizzly bears are expected to increase but relatively slowly, especially for females. As described in Proctor et al.(2012), males move more frequently and over longer distances than females; males have large home ranges and establish home ranges nearly three times further away from their mother's home ranges than do female offspring. Females usually establish smaller home ranges than males that overlap with their mother's home range (Waser and Jones 1983, Schwartz et al. 2003). In doing so, they generally disperse over much shorter distances than male grizzly bears (McLellan and Hovey 2001, Proctor et al. 2004). Therefore, female dispersal is a multi-generational process where females must live year-round in an area, successfully reproduce, and offspring disperse into adjacent, unoccupied habitat.

While assessing measure of effects due to the continued implementation of the Forest Plan, Travel Management Plan, and proposed Amendment, two factors are important to consider. First, the likelihood of grizzly bears being present or using the action area (likelihood of exposure), and second, the scope and scale of effects (magnitude of stressors). Furthermore, grizzly bears expanding into new areas tend to be subadult or male bears due to population dynamics and biology (Mace and Manley 1993, Mace et al. 1996, Mace and Roberts 2012a, U.S. Department of the Interior, Fish and Wildlife Service 2019). Displacement effects from any project-specific activities will have more significant impacts on adult female grizzly bears than males or subadults because adult females have higher energetic needs to sustain fitness prior to and during gestation and lactation and when rearing. As such, adult females can less afford the additional energy expended to find high quality foods and shelter if displaced, especially during the early spring or late summer to fall hyperphagia season. As noted above, due to the very low to non-presence of bears in the action area, and the dispersal patterns of grizzly bears, female grizzlies and female grizzlies with cubs are not expected to occur (or there is an extremely low likelihood of occurrence) in the action area within the foreseeable future. If disturbance of presumably transient, male bears did occur related to the continued implementation of the Forest Plan, Travel Management Plan, and proposed Amendment, a majority of these effects would be temporary and insignificant with the exception of effects to secure habitat, management of food/attractant storage, and grizzly bear/human interactions (Table 10).

Table 10. Direct and Indirect Effects Analysis summary table

Direct and Indirect Effects of continued implementation of the Forest Plan, Travel Management Plan, and proposed Amendment to:	Measure of Effect	Justification
Motorized access	Adverse	The Forest estimates it may construct new motorized routes in the future (permanent or temporary), and that some of those routes may result in adverse effects to female grizzly bears. The majority would be restricted to public motorized access, but would be available for administrative use. The Forest anticipates no more than up to a 5% net reduction of secure habitat on Bitterroot National Forest lands in Montana, over the life of the Forest plan, Travel Management Plan, and proposed Amendment. All of this reduction would occur outside of the Bitterroot Ecosystem, as no road construction is permitted in the Bitterroot Ecosystem and the area was buffered by 500 meters in the analysis. While grizzly bears do not currently occupy the action area, these indirect effects may adversely affect grizzly bears in the foreseeable future (section 3.1.1).
Domestic Livestock	Insignificant	There are currently no domestic sheep grazing allotments on the Forest. Current cattle allotment stocking levels are low and not expected to increase. The risk of adverse impacts on grizzly bears due to forage competition, displacement, or livestock-related mortality is very low (section 3.1.2).
Management of food/attractants and developed recreation sites	Adverse	The Forest does not have a food/attractant storage order; however contractors are required to store food in vehicles or bear-resistant containers. Instances of conflicts with black bears on the Forest are low, but have occurred. The Forest has developed recreation sites with bear-resistant trash containers and is actively involved in education efforts. Certain recreation sites have had chronic or recurring problems with black bears. These indirect effects may adversely affect grizzly bears that move into or through the action area and could negatively impact the ability of the action area to support connectivity between recovery areas (section 3.1.3).
Vegetation and Fire Management on availability of cover, denning habitat, and food	Beneficial/Discountable	The combination of wildfires and active vegetation management (timber harvest, fuels treatment, and prescribed fire) will continue to recruit early forest successional stages that produce a variety of bear foods while maintaining a mosaic of food and cover. Denning habitat will be largely undisturbed due to a majority of these area being located in inoperable areas. Any grizzly bears moving through the action area should be able to readily locate desirable food resources such as grasses, forbs, and berries. The risk of adverse impacts on grizzly bears due to vegetation management is low (section 3.1.4).

Direct and Indirect Effects of continued implementation of the Forest Plan, Travel Management Plan, and proposed Amendment to:	Measure of Effect	Justification
Energy and mineral Development	Discountable	Due to the small footprint and overall low level of mineral and energy development activity on the Forest, the potential to negatively impact (through disturbance, displacement, or mortality risk) any grizzly bears moving into or through the action area is likely to be low (section 3.1.5).
Grizzly Bear/Human Interactions	Adverse	While there have been no records of grizzly bear/human interactions, the Forest expects the potential for these interactions to increase over time. Although the Forest does not have a food/attractant storage order, it is likely within the foreseeable future that this will be an additional needed measure to reduce impacts from grizzly bear/human interactions. While grizzly bears do not currently occupy the action area, these indirect effects may adversely affect grizzly bears in the foreseeable future (section 3.1.6).

3.1.1 Effects of Motorized Access

The Biological Assessment for the Bitterroot National Forest Plan (U.S. Department of Agriculture 2019) did not analyze secure habitat, but did analyze effects on route density to grizzly bears. As mentioned above, an intersection of route density to secure habitat exists because secure habitat includes the effects from current route density as described in the secure habitat analysis (section 2.3.1). If new motorized routes are created in areas that are currently not secure habitat, higher route densities may exacerbate effects to grizzly bears moving into or through the area including higher mortality and displacement, although depending on the status of these roads (open to public motorized use or restricted) and time on the landscape (permanent versus temporary route) these effects would be less than new permanent routes into existing secure habitat. If new motorized routes are constructed in or near areas that currently offer secure habitat, a decrease in the amount or arrangement of secure habitat may occur. Alternatively, building a new route in the midst of a dense area of existing roads may have little to no effect on existing secure habitat.

The Forest Plan, Travel Management Plan, and proposed Amendment would allow for future projects to create new permanent and temporary motorized routes and to remove existing motorized routes in the action area. No standards exist that would limit the miles of routes that could be built in the future other than land designations that prohibit route construction by law, policy or rule. An analysis was completed to examine the current acreage and percentage of the action area and individual GBAUs that exists in Wilderness, Wilderness Study Areas (WSA), and Inventoried Roadless Areas (IRAs). No motorized route construction is permitted in these areas. Acreage and percentage of areas outside of Wilderness, WSAs, and IRAs was calculated, which represents potential acres that do allow route construction. This calculation does not incorporate feasibility of construction, routes currently on the landscape, or Forest Plan management areas in the action area that may limit route construction; it only provides a rough metric for how much area is potentially available. Finally, of the acreage that is potentially available for route construction, an analysis of existing secure habitat that may be impacted if routes and associated buffers eliminated all secure habitat in these areas was calculated.

Temporary roads built during a project's implementation may temporarily affect secure habitat, by widening the disturbance and displacement effects on individual bears through increased noise, vehicle traffic, and general human activity associated with Forest management activities. These effects would be limited to the duration of the project if the temporary roads are obliterated or made impassable after the project's completion. For these temporary effects, a temporary road is a road that exists on the landscape for no more than 5 years. Most future temporary roads will be within areas that are not currently providing secure habitat because of their general proximity to permanent roads; however, some amount of secure habitat may be affected.

Regardless of the differences between temporary effects from temporary road construction during project implementation and longer-lasting effects from permanent road or route construction, the Forest has chosen to consider all temporary road and permanent road/route construction the same for the purposes of effects to Action Area-wide secure habitat.

Of the action area, there are approximately 51,441 acres (8%) of secure habitat outside of Wilderness, WSAs, and IRAs that could be affected by route construction (See Appendix G). Of this 8%, the Forest estimates that new route construction (permanent or temporary) may affect up to a maximum of 5% of secure habitat Action Area-wide, which roughly equates to 31,400 acres or 2.6% of the total Action Area acreage. Each GBAU has differing amount of secure habitat outside of Wilderness, WSAs, and IRAs that may be affected. However, outside of Wilderness, WSAs, and IRAs, no GBAU contains more than 1% of total secure habitat across the Action Area that would be reduced if all secure habitat was eliminated in that GBAU by new route construction.

The Forest may obtain updated information regarding the baseline amount of secure habitat in a GBAU if routes used in this analysis do not actually exist on the landscape or if they are impassable. These database corrections would not result in any actual changes on the ground, and thus no effects to grizzly bear.

During future project implementation, if the Forest obliterates or makes impassable route prisms currently affecting secure habitat an increase in available grizzly bear secure habitat would likely result.

Research has demonstrated that the presence of roads and associated human activities impacts grizzly bears during the non-denning season by displacing them from important habitats and lowering their survival rates (Mattson et al. 1987, McLellan and Shackleton 1989a, Mace et al. 1996, Boulanger and Stenhouse 2014). McLellan (1990) emphasized the importance of closing motorized routes after resource extraction activities are complete to restore habitat effectiveness. Boulanger and Stenhouse (2014) demonstrated a strong relationship between grizzly bear population trends and the average density of open roads in their analysis of 142 grizzly bears monitored in Alberta from 1999–2012. The roads in their study area were almost entirely (96.5%) gravel secondary roads associated with settlements and industrial resource extraction activities, and were open for public use year round. There were no motorized trails in their study area. There are some differences between the Alberta study area and the action area. For example, any bears present on the Forest are most likely to be young male bears, and there is less industrial activity but more recreational activity on the Forest than in the Alberta study area. Nevertheless, the thresholds provide some useful benchmarks for evaluating potential effects of motorized route density, and thus secure habitat, on grizzly bears.

The Travel Management Plan (section 1.3) administratively changed the travel status of certain routes across the action area. Some of the changes will require site-specific NEPA analysis and have not yet been completed. These changes are in the minority of Travel Management Plan actions. For instance, an upcoming project is proposing to decommission over 35 miles of routes. Once NEPA is complete, these routes will be obliterated or made impassable, and in certain instances, may slightly increase grizzly bear

secure habitat. Other obliterated or routes made impassable will not affect the total acres of grizzly bear secure habitat because the remaining route density and associated buffers exclude secure habitat. Therefore, the potential for displacement and risk of mortality for any grizzly bears that may be attempting to move into or through the action area would remain largely the same, although a slight reduction may be realized in the future as remaining Travel Management Plan actions are implemented.

The Amendment would replace certain standards as they relate to elk habitat management and road density. Because this amendment does not authorize or prohibit future route construction, and the effects of the existing route density are analyzed above related to grizzly bear secure habitat, the Amendment will have no additional effect to motorized access on grizzly bears.

The Bitterroot Ecosystem comprises 20% of the action area, and combined with the Bitterroot Ecosystem outside of the action area, contains 3.7 million acres of primarily unroaded wilderness areas (Selway-Bitterroot and Frank Church-River of No Return). This area serves as a vast expanse of secure habitat that grizzly bears moving into or through the action area could use if displaced from the GBAUs in the action area.

In summary, based on the direction in the Forest Plan, Travel Management Plan, and the proposed Amendment, the amount of *linear miles of motorized routes* in each GBAU shown (Table 4) would be expected to remain more or less static over time. However, both permanent and temporary route construction will likely occur in the foreseeable future, and depending on where these actions occur spatially on the landscape, this construction and resulting buffers as described above (section 2.1.1) may reduce total acres of secure habitat available on the Forest. From these actions, the Forest estimates a net change of up to a 5% reduction of secure habitat across the action area that will only occur in GBAUs. There will be no change in secure habitat in the portion of the Bitterroot Ecosystem inside the action area, as this area is wilderness, no road construction is permitted, and the it was appropriately buffered in the analysis to capture effects of routes that may be constructed up to the boundary.

Over-snow Motorized Access

Section 2.2.8 identified how much current over-snow motorized access is prohibited in the Action Area (85%), where modeled denning habitat exists. Fifteen percent (12,711/84,261 acres) of the modeled denning habitat has no prohibitions on over-snow motorized access, which represents approximately 1% of the total Action Area acres. Most of the modeled denning habitat depicted in section 2.2.8 (Appendix A, Map 14) is located withing the Selway-Bitterroot Wilderness which is part of the Bitterroot Ecosystem, and over-snow motorized access is prohibited. There are scattered other patches of modeled denning habitat throughout the Action Area in areas that both allow and prohibit over-snow motorized access, however, the largest potential patches that may be affected by spring over-snow motorized access are in the lower Roaring Lion drainage in the Lost Horse Creek GBAU, upper Willow Creek and Skalkaho Mountain areas of the Burnt Fork Bitterroot River GBAU, Daly Creek drainage in the Skalkaho GBAU, Sleeping Child Creek drainage in the Sleeping Child Creek GBAU, and in the areas of Piquett, Slate, Overwhich, and Fault Creeks in the Upper West Fork Bitterroot River East GBAU. Despite these areas being available to over-snow motorized access, a majority of the modeled habitat is on extremely steep slopes and it is unlikely that denning bears would be highly impacted by motorized activity.

3.1.2 Effects from livestock grazing

The analysis of the management situation for the Forest Plan revealed a substantial, ongoing decline in the number of permitted livestock use on the Forest. There was a decrease from 23,900 animal unit months (AUMs) in 1950, to 13,000 AUMs in 1986. The decrease was attributed to subdivision of ranches and a general decrease of livestock in the Bitterroot valley. The most recent forest plan monitoring report shows a further decline . Eight permittees grazed 1,634 AUMs on eight allotments in 2014, and six permittees grazed 892 AUMs on six allotments in 2015 (U.S. Department of Agriculture 2016c).

Horses and mules may be permitted for use on NFS lands, primarily in support of outfitter and guide operations or Forest Service administrative use in wilderness areas. There is no evidence of conflicts with bears due to depredation or forage competition, so horse and mule grazing permits are expected to have no effect on any grizzly bears occurring in the action area.

Honeybees, classified as livestock in Montana (MCA 15–24–921), can attract some grizzly bears. There are some apiaries on private land in the Bitterroot valley but none on the Forest. Tools such as electric fencing can be used effectively to reduce potential conflicts with beekeeping.

Because all livestock grazing allotments on the Forest permit cattle (not domestic sheep) and current stocking levels are low and not expected to increase, the risk of adverse impacts on grizzly bears due to forage competition, displacement, or livestock-related mortality is very low. No effects from either the Travel Management Plan or the Amendment would alter livestock grazing on the Forest, and therefore no additional effects are expected.

3.1.3 Effects of management of food/attractants and developed recreation sites

Improperly stored food, garbage, and/or livestock or pet foods can lure grizzly bears to areas near people and pose a significant risk of habituating bears to human presence and/or conditioning grizzly bears to seek out anthropogenic foods and attractants. Food conditioned grizzly bears enter unsecured garbage receptacles, sheds, and other buildings in search of a reward. Accessibility to human related attractants and conditioning to those rewards can lead to management removal of grizzly bears and additionally, mortality of grizzly bears by people defending their life and property.

Incidence of property damage or conflicts associated with human related foods is inversely proportional to the availability of high quality grizzly bear foods found in the wild; during periods of poor natural food production incidences of human-grizzly bear conflicts typically increase. When poor seasonal bear foods exist in part of or through the entire non-denning season in the GYE and NCDE, the incidences of bears causing property damage and obtaining anthropogenic foods increased significantly over average or good years (Gunther et al. 2004, Manley et al. 2005). The conflict relationship is magnified when the availability of late season natural foods such as whitebark pine seeds is insufficient to meet the high energy requirements during hyperphagia (Mattson et al. 1992).

Numerous studies in the NCDE elucidate the importance of late-season frugivory, especially huckleberries (*Vaccinium globulare*), by grizzly bears (Martinka and Kendall 1986, Weaver et al. 1996). Berry failure due to drought or destruction of plants by fire would force grizzly bears to range more widely than in normal periods of seasonal availability (Blanchard and Knight 1991). Therefore, grizzly bears face an increased risk of encounters with humans and ultimately human-caused mortality during the autumn season. Grizzly bears in some areas that avoided trails with human activity during part of the year changed this avoidance behavior when a favored berry resource came into season (Donelon 2004). Although grizzly bears still had a low tolerance for trails with high human activity, the tendency to approach areas of human activity when nutritional and energy needs are high could put individual bears at an increased risk of immediate conflict or condition them to the presence of people, which could lead to conflicts later in time.

There are instances of food conditioning and conflicts with black bears that are known to have occurred in the Bitterroot valley. Under the existing condition regarding a lack of a food/attractant storage order on the Forest, the mortality risk is relatively high for any grizzly bears moving into or through the Forest and adjoining private lands, especially if the bear has had previous experience with obtaining human food or garbage. This could negatively impact the ability of this area to support connectivity between recovery areas, including potential future recolonization of the Bitterroot Ecosystem.

The Forest has 27 developed sites in the action area that provide for recreational and/or administrative overnight stays. Developed sites can pose risks of unsecured attractants and food left by campers, hunters, and people using the sites. Habituated grizzly bears learn to seek out developed sites for food rewards. Habituation and food conditioning of grizzly bears is a concern in all grizzly bear populations. Throughout the distribution of grizzly bears, habituation/food conditioning remains a fairly serious risk to individual grizzly bears.

No grizzly bear mortalities associated with improper food storage or site conflicts have been reported within the action area. However, improper storage of attractants and foods can present a risk of food conditioning grizzly bears. Thus, throughout the distribution of grizzly bears, habituation/food conditioning remains a risk to individual grizzly bears. Therefore, it is reasonable to expect that some risk of adverse impacts, though low (based on grizzly bear numbers, bear numbers are likely to increase slowly over time, and history of no attractant related conflicts in the area), to some grizzly bears related to attractant management exists over the life of the Forest Plan.

The Travel Management Plan and Amendment have no impacts to the management of food/attractants or developed recreation sites and thus, no effects are expected to grizzly bears.

3.1.4 Effect of Vegetation and Fire Management to cover, denning habitat, and food availability

Vegetation Management

Vegetation management may impact grizzly bears as a result of the short-term disturbance. Longer-term effects related to vegetation management include impacts to grizzly bear cover and forage. A decrease in the amount of cover may result in different effects to grizzly bears and their habitat. If cover is limiting in the project area, either by the amount or distribution, vegetation management may result in negative impacts (Ruediger and Mealey 1978). Reduced cover may increase the visibility of grizzly bears, which may potentially increase their vulnerability to illegal human-caused mortality and/or contribute to displacement from preferred habitats. However, if cover is not limited in a project area, timber harvesting may have either no effect or a positive effect in those situations where food abundance or distribution is improved. By removing or reducing overstory vegetation through harvesting, slashing and/or burning, sunlight reaches the forest floor, and grizzly bear food production (i.e. berries and succulent forbs) may be increased (Ruediger and Mealey 1978).

The Forest Plan identified unsuitable timber lands from a number of different factors (topography, access, etc.). Subtracting these acres and areas where timber harvest is not authorized (wilderness areas, WSAs, IRAs to some degree), the action area contains 364,176 acres (approximately 30%) as suitable for timber production within the action area (Appendix A, Map 15). Site specific project analysis will determine the type and extent of harvest and potential effects to grizzly bears. Every proposed vegetation management project within the action area would consider potential effects to grizzly bears during the site specific project analysis process.

Activities that occur along with vegetation management activities such as temporary road construction, restricted road use, or helicopter use may result in additional effects to grizzly bears. Such effects could range from none/minimal to adverse depending on site-specific information. The effects of temporary or permanent roads are discussed above (section 3.1.1). Additional effects from helicopter logging have been described in previous literature and may include simple awareness of helicopters to short-term displacement from overflights, to complete displacement from an area (McLellan and Shackleton 1989b). The Forest last implemented a project using helicopter logging in 2008, and it is highly improbable that any helicopter logging will be conducted in the foreseeable future; however, this potential activity cannot be eliminated. Potential effects that may occur as a result of temporary road use and/or helicopter use associated with vegetation management would be considered in a site-specific analysis. Although we

anticipate more grizzly bears will inhabit the action area in the future, the number of bears is likely to be small relative to the size of the action area and numbers would increase slowly. Grizzly bears that may be affected by helicopter use or temporary roads over the life of the plan are likely to have options to move out of the area, given the amount of habitat available and vast areas of secure habitat in proximity to operable timber lands.

Of the 84,222 acres of denning habitat identified in the action area, only 3445 acres (4%) intersect areas suitable for timber production. The remaining 96% occur in the portion of the Bitterroot Ecosystem in Montana or on unsuitable lands (including WSAs and IRAs or other identified acres from the Forest Plan). These potential mapped denning habitat areas occur on steep slopes in higher elevation, where vegetation management may not be feasible or accessible and will thus have little to no impact.

Of the 29,566 acres of identified whitebark pine, only 138 acres (0.4%) intersect areas suitable for timber production. The remaining 99.6% occur in the portion of the Bitterroot Ecosystem in Montana or on unsuitable lands (including WSAs, IRAs, or other identified acres from the Forest Plan). The potential mapped acres of whitebark pine may be affected if projects specifically called for mechanical vegetation management of these areas. However, whitebark pine areas on the Forest are targeted for improvement treatments using non-commercial methods such as day-light thinning to restore these important areas. Food sources for grizzly bear such as huckleberry may respond poorly to vegetation management depending on the forest type, soil characteristics, slope/aspect, and the treatment (Martin 1979). However, huckleberry is widely dispersed across the action area and vegetation management alone is expected to have minimal effects to the total availability of this food source. With respect to big game as a food source, vegetation management may alter the amount and distribution of cover and forage areas and change elk movements, distribution, and habitat use (Leege 1984). Leege (1984) further suggested that beneficial forage can result after logging in elk home ranges that have a dense canopy and a limited understory of shrubs, grasses, and forbs, whereas logging in forests with many natural openings may not provide forage benefits. Much other research has been done regarding vegetation management effects to elk (Wisdom et al. 2000, Peek et al. 2002, Wisdom et al. 2004) showing both potential positive and negative effects; however, elk populations continue to increase in the action area and availability of this food source to grizzly bears is expected to have none to beneficial effects to grizzly bears, as elk respond to vegetation changes on the landscape.

As noted earlier, the Travel Management Plan addressed conflicts between forest users, enhancing recreational experiences, and integrating resource considerations into route planning. Access to vegetation management played a role in this decision; however, travel management planning has little effect to cover availability for grizzly bears due to the administrative changes made to route usage and location. Current and future decommissioned routes will slowly regrow vegetation that may provide additional cover types for bears to use. Other routes that existed pre- and continue to exist post-Travel Management Plan are not expected to change availability of cover, other than providing access to areas for treatment in future project planning. Site specific project analysis will determine the type and extent of these travel management plan changes and potential effects to grizzly bears. As noted above, denning habitat is severely limited in areas where vegetation management and any potential future route planning could occur. Feasibility of building new routes in these areas of where denning habitat (severe slopes) may exist is significantly limited, and expected to have no effect to grizzly bears. The Travel Management Plan did alter the status of a number of routes by either seasonal restrictions, closing to public motorized access, or decommissioning. These changes largely benefit elk, as much research has been done on the impact of motorized travel routes to elk distribution (Lyon 1983, Skovlin et al. 2002, Proffitt et al. 2013, Ranglack et al. 2017), and reduction in route density on the landscape has beneficial effects to elk distribution and disturbance response. Therefore, the Travel Management Plan changes may have a minor beneficial effect to elk availability to grizzly bear, as elk respond positively to route changes made in the Travel Management Plan.

The Amendment generally will have positive ancillary effects to grizzly bear from vegetation management regarding cover, denning habitat and food availability. Forest guidelines and management approaches included in the Amendment will direct the Forest to make travel management decisions and vegetation management activities during project planning beneficial to elk, while cooperating with State wildlife agency biologists. Much like grizzly bear, elk depend on secure areas; and food availability, palatability, and nutritional content play an important role in elk reproduction and distribution (Proffitt et al. 2016). While the Amendment will not produce immediate effects, the indirect effects of these guidelines may provide beneficial effects to grizzly bear in the long term by using vegetation management to increase elk forage, thus providing positive effects to elk, which in turn may provide more elk availability for grizzly bears.

Fire Management

Fire management may result in disturbance and displacement impacts to grizzly bears. Fire suppression activities involve the presence of humans and often include the use of motorized equipment. Grizzly bears would likely leave an area on their own accord in advance of an approaching fire and therefore be out of the area associated with fire suppression activities. However, if suppression activities were to take place prior to an approaching fire, grizzly bears may still be in the vicinity. Some effects from disturbance may be caused by the overall increase in human activity in a particular area. These activities may include increased vehicular traffic, noise from operating mechanical equipment, and/or aerial support and fire camps, any of which may affect a grizzly bear prior to their leaving the area. The possibility of a direct encounter with a grizzly bear by a person or group of people involved in fire management activities is remote.

Indirect effects from fire suppression, prescribed fire, or fuels treatment activities may result from opening previously restricted roads, constructing new roads or temporary roads, constructing firebreaks, and/or constructing machine lines. These actions may temporarily contribute to the open and total road densities or may result in effects to grizzly bears similar to effect of roads on grizzly bears (section 3.1.1). In addition, food and garbage storage at activity sites and camps may attract grizzly bears and contribute to risks (section 3.1.3).

Wildland fires for resource benefit are typically allowed to burn where there is some degree of certainty that the fire would go out naturally or could be contained within predefined lines. These types of fires, when allowed to burn, can result in short-term negative effects and/or long-term beneficial effects depending on the vegetation species and fire severity. Some foraging habitat and/or cover may be affected in the short-term. However, natural fire often stimulates the understory and/or increases the vegetative diversity (forbs, grasses, berry-producing shrubs) in high quality grizzly bear habitat, benefitting grizzly bears in the long-term.

Suppression efforts and use of prescribed burning and fuels treatment (mechanical non-commercial thinning or pile burning) would continue under the Forest Plan. The acres available for these activities and locations vary across the action area. The effects on grizzly bears associated with fire suppression and/or wildland fire for resource benefit would be analyzed in emergency consultation after the suppression activities are complete. A site-specific analysis of effects on grizzly bears and grizzly bear habitat as a result of fuel treatments, including prescribed burning, would occur prior to implementation of a project.

The Travel Management Plan decision mandated that routes restricted to public motorized use remain available to Forest Service personnel for administrative purposes including wildfire suppression, search and rescue, medical emergencies, permit administration, data collection, noxious weed treatments, general

management, and other activities. While prescribed fire, suppression activities, and fuels treatments can use these routes, these effects are described above (section 3.1.1). Therefore, the effects from the Travel Management Plan on fire management have already been identified.

The Amendment guidelines include prescribed fire and wildfire as a vegetation management activity to enhance vegetation beneficial to elk on winter range (prescribed fire) and summer range (wildfire). The indirect effects of these guidelines may provide beneficial effects to grizzly bear in the long term by using prescribed fire and wildfire to increase elk forage, thus providing positive effects to elk, which in turn may provide more elk availability for grizzly bears.

In summary, the combination of wildfires and active vegetation management (timber harvest, fuels treatment, and prescribed fire) specified in the Forest Plan, Travel Management Plan, and Amendment will continue to recruit early forest successional stages that produce a variety of bear foods while maintaining a mosaic of food and cover, while minimizing effects to potential denning habitat. Any grizzly bears moving through the action area should be able to readily locate desirable food resources such as grasses, forbs, and berries.

3.1.5 Effects of energy and mineral development

The Forest Plan monitoring report for 2010-2103 reported that there were no adverse effects on the surface resources as the result of mining (U.S. Department of Agriculture 2014). Given the small footprint and overall low level of mineral and energy development activity on the Forest, the potential to negatively impact (through disturbance, displacement, or mortality risk) any grizzly bears moving into or through the action area is likely to be very low.

3.1.6 Effect to grizzly bear/human interactions

As grizzly bear populations in surrounding recovery zones continue to increase, it is likely that more grizzly bears will move into or through the action area. While none of these interactions have yet occurred, the Forest expects some level of grizzly bear/human interactions in the future. The Bitterroot Valley human population is expected to continue to increase, and this increase will likely increase recreational use on the Forest. Small, rural populations of humans will likely see increased evidence of grizzly bear use before the larger more urban populations of Hamilton and Stevensville. Developed and dispersed recreation sites will likely have an increased potential for conflicts despite the proactive approaches the Forest has undertaken including bear-resistant trash cans and education. In recent years, interactions between grizzly bears and humans have increased on other public lands as more recreation and hunting pressure is realized.

While it is likely that the Forest will see grizzly bear/human interactions in the future, the timeframe for more grizzly bears to move into or through the action area is difficult to discern based on the analysis contained within this BA. Although the Forest currently does not have a food/attractant storage order, it is likely within the foreseeable future that this will be an additional needed measure to reduce impacts from grizzly bear/human interactions.

4.0 Cumulative Effects

Cumulative effects are the effects of past, present and future state, tribal, local or private actions that have occurred, are occurring, or are reasonably certain to occur in the action area. The existing condition reflects the sum of past actions. The analysis of cumulative effects provides a larger context in which to evaluate existing conditions and the effects of continuing to implement the Forest Plan. This section discusses the effects of management on adjoining state and private lands, the potential for connectivity for species, and the ongoing effects of climate change.

4.1 Montana Department of Natural Resources and Conservation

The Montana Department of Natural Resources and Conservation (DNRC) administers 5.2 million acres of school trust lands throughout the state to achieve the mission of producing long-term income for the designated trust beneficiary (such as schools). Effect to grizzly bears were analyzed and consulted on for DNRC's Habitat Conservation Plan (Montana Department of Natural Resources 2010, Department of Interior, Fish and Wildlife Service 2018)The DNRC's state forest land management plan emphasizes intensively managing for healthy and biologically diverse forests to provide a reliable and sustained income. The state forest land management plan also directs the transportation system to be planned for the minimum number of road miles. DNRC will only build roads that are needed for current and near-term management objectives, as consistent with the other resource management standards. DNRC would determine the appropriate road density to meet Threatened and Endangered Species, Big Game, Sensitive Species, and Biodiversity Resource Management Standards, as well as road surface protection and other resource needs. (Montana Department of Natural Resources and Conservation 2010). State lands were not considered in the analysis above regarding secure habitat for grizzly bear. Any secure habitat that is provided would be in addition to the existing baseline previously analyzed in section 2.0.

The DNRC manages numerous small parcels scattered through the Bitterroot valley as well as the Sula State Forest. State lands within the action area were mostly burned during the fires of 2000, and were salvage logged shortly thereafter. No additional timber harvest and associated road building activities are anticipated to occur on state lands in the near future.

For state lands that are located within grizzly bear recovery areas, contract language requires daily removal of garbage from work sites. Outside of recovery areas but in known occupied grizzly bear habitat, timber sale contract language requires the removal of garbage from work sites daily. For DNRC lands outside of recovery zones and outside known occupied grizzly bear habitat, precautions are taken on a case-by-case basis only if known bear activity occurs. Recreationists are expected to pack out their trash.

As a partner in the Blackfoot Challenge, DNRC has placed bear-resistant dumpsters at state land locations where bear-attractant conflicts have been known to occur. The DNRC provides all of its cabin lessees with the brochure "Living with Bears" that explains measures that should be taken to minimize human-bear conflicts. No Montana DNRC employees or contractors have been involved in a human-grizzly bear conflict that resulted in a management action or death of a grizzly bear.

No adverse cumulative effects are anticipated due to management actions of DNRC.

4.2 Montana Department of Fish, Wildlife and Parks

The Threemile Wildlife Management Area is adjacent to the Forest at its northeastern end, and the Calf Creek Wildlife Management Area (WMA) is located east of Hamilton, adjacent to the Forest boundary. The primary management goal of both WMAs is to provide winter range for elk and compatible recreational opportunities for the public. Both WMAs are restricted to all public access from December 1–May 15 to reduce disturbance to wintering elk. Threemile WMA offers a mix of motorized and walk-in recreational opportunities from May 15 to December 1. Calf Creek WMA is open only to non-motorized access from May 15 to December 1, with travel allowed by foot, horseback, or mountain bike. Pack in/pack out is required for food and garbage at both WMAs. Adverse effects from these activities are related to the effects discussed in the subsections above (section 3.0). Public recreation in these areas may increase the likelihood of grizzly bear human interactions. Direct mortality of grizzly bears may result from defense of life or management removal if any grizzly bears traveling through or into these areas have conflicts with humans. Recreational use may result in displacement of grizzly bears from disturbance.

MFWP completed a grizzly bear management plan for western Montana in 2006 (Dood et al. 2006) and a grizzly bear management plan for southwestern Montana in 2013 (Montana Fish Wildlife and Parks

2013). Grizzly bear management plans establish goals and strategies to manage and enhance grizzly bear populations and to minimize the potential for grizzly bear-human conflicts. A long-term goal is to allow the populations in western and southwestern Montana to reconnect through the intervening, currently unoccupied habitats.

MFWP is very active in providing public information and education about conserving grizzly bears and their habitat. Several bear management specialists, including one stationed nearby in Missoula, work with landowners and educate the public in an effort to avoid or resolve human-grizzly bear conflicts and to reduce grizzly bear mortalities. Bear specialists provide information and assistance to landowners on appropriate ways to secure food and bear attractants and respond to reports of conflicts with black bears and grizzly bears. These programs have a proven track record of success in informing the public, reducing the availability of attractants to bears on private and public lands, and reducing human-caused mortalities of grizzly bears.

The State of Montana regulates hunting for black bears and other wildlife species. Hunting of grizzly bears has not been allowed in Montana since 1991. There is a potential for grizzly bear mortality by hunters to occur as a result of mistaken bear identification or self-defense, especially in proximity to the carcasses of harvested animals. MFWP provides a variety of public information and education programs, including a mandatory black bear hunter testing and certification program, to help educate hunters in distinguishing the two species. Black bear hunting seasons have been shortened in recent years, reducing the potential for mistaken identity. These efforts have helped to decrease legal and illegal shooting mortalities.

No additional adverse cumulative effects are anticipated due to management actions of MFWP

4.3 Private Lands and Activities

The human population in northwest Montana has grown at a relatively high rate during the past few decades, and growth is expected to continue. Increasing residential development and demand for recreational opportunities can result in habitat loss, habitat fragmentation, and increases in human-grizzly bear conflicts. Private lands continue to account for a disproportionate number of conflicts and grizzly bear mortalities in Montana. These impacts are likely to intensify, although appropriate residential planning, outreach to landowners about how to avoid conflicts, tools such as bear-resistant containers and electric fencing, and assistance in resolving conflicts can help prevent or reduce these impacts.

Increasing development on private lands and the accompanying risk of human-grizzly bear conflicts has potential to have cumulative adverse effects on grizzly bears that move into and through the action area.

Summary of all Effects with respect to Connectivity and Climate Change

Connectivity

Dispersal between disjunct populations can play an important role in the persistence of a species by increasing genetic diversity in the receiving population, facilitating colonization and recolonization of unoccupied habitats, and augmenting the numbers of small populations (Hanski and Gilpin 1997, Mattson and Merrill 2002). In this section, the effects of the Forest Plan, Travel Management Plan, and Amendment are evaluated in this larger context.

While few to no grizzly bears are currently known to exist in the action area, the cumulative interaction of the Forest Plan, Travel Management Plan, and Amendment serve to enhance connectivity between known grizzly bear populations and potential future grizzly bear populations that may inhabit the Bitterroot Ecosystem and the action area. These connectivity enhancements consists of management of appropriate secure habitat for grizzly bears; management and/or enhancement of necessary habitat requirements for grizzly bear survival and reproduction including cover, food availability, and potential denning habitat; and awareness and education of Forest users related to food/attractant management, recreational use, and grizzly bear human interactions.

The NCDE, Selkirk, and Cabinet-Yaak populations could serve as a source of grizzly bears for the Bitterroot Ecosystem. It would require movement of both male and female grizzly bears to establish a population in the Bitterroot Ecosystem, and because females disperse less often and for shorter distances than males, occupancy by female bears is likely to take much longer to achieve than the movement by male bears that is needed to establish genetic connectivity with the GYE.

Walker and Craighead (1997) modeled potential movement corridors that could link wildlife populations in the Salmon-Selway, Northern Continental Divide, and Greater Yellowstone Ecosystems. The probable best route connecting the NCDE grizzly bear population to the Bitterroot Ecosystem included the northern end of the Sapphire Mountains. Peck et al. (2017) modeled potential paths for male-mediated gene flow to and from an isolated grizzly bear population and also showed the potential for male grizzly bears to move through the action area though the Sapphire and Bitterroot Mountains. Current conditions in action area appear to be compatible with supporting the movement of grizzly bears.

Climate Change

The rate of change and the impacts from climate change are accelerating. The Service examined climate change and potential future effects on the grizzly bear in its 5-year status review (U.S. Department of the Interior 2011). The most likely ways in which climate change may potentially affect grizzly bears are reduction in snowpack levels, shifts in the denning season, shifts in the abundance and distribution of some natural food sources, and changes in fire regimes due to summer drought.

Reduced snowpack or a shorter winter season could improve over-winter survival of bears, assuming that sufficient bear foods are available later in the fall and earlier in the spring. However, a shorter denning period could increase the potential for spring and fall encounters between grizzly bears and hunters and/or recreationists, which in turn would increase the risk of mortality to grizzly bears (Servheen and Cross 2010).

The extent and rate to which individual plant species or plant communities will be impacted by climate change is not possible to foresee with any level of confidence (Walther et al. 2002, Fagre et al. 2003). However, there is general consensus that grizzly bears are flexible enough in their diet that they will not be impacted directly by plant community changes in response to climate change (Servheen and Cross 2010). Fire frequency and severity are predicted to increase in the western United States as a result of climate change. Large, severe wildfires that convert mature forest to early successional condition alter the availability of grizzly bear foods and cover, potentially changing how bears use the landscape. Decreases in forest cover could benefit grizzly bears by increasing the production of shrubs, berries and root crops in the years following large fires (Blanchard and Knight 1996).

The potential positive and negative effects of climate change would likely be variable and are difficult to predict. Grizzly bears are habitat generalists and opportunistic omnivores, which may make them less susceptible to changes in plant communities than some other species of wildlife. There is a high degree of uncertainty, but the continuing effects of climate change are unlikely to reduce the ability of the Forest to support occasional bears moving into or through the action area.

5.0 Determination of Effects and Rationale

The existing conditions and the continued implementation of the Forest Plan, Travel Management Plan, and proposed Amendment ***may affect, and is likely to adversely affect*** grizzly bears. This determination is based on the following rationale:

1. Very few to no grizzly bears are currently known to occupy the action area and grizzly bear numbers are expected to increase very slowly over time, based on previous research and the known biology of female grizzly bears;

2. the existing secure habitat indicates that over the life of the Forest Plan, Travel Management Plan, and Amendment, the Forest anticipates up to a 5% net reduction in currently available secure habitat from any (permanent or temporary) motorized route construction. There is potential for adverse effects on individual bears that occur in the action area, due to displacement and risk of human-caused mortality;

3. the existing condition in which the Forest lacks a food/attractant storage order(s), except in the Anaconda-Pintler wilderness area and as required by individual contracts and permits, increases the risk of human-caused mortality, particularly for any bears that previously have been food-conditioned;

4. there are potential adverse effects on individual bears that occur in the action area due to increased potential for grizzly bear/human interactions as bears move into or through the action area with a potential increase in recreational use of the Forest; and

5. there is little or no risk of adverse effects on any grizzly bears moving into or through the action area due to current practices and activities related to domestic livestock, vegetation management, and energy and mineral development in the action area.

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